PAPER TRADE JOURNAL

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NOVEMBER 16, 1944

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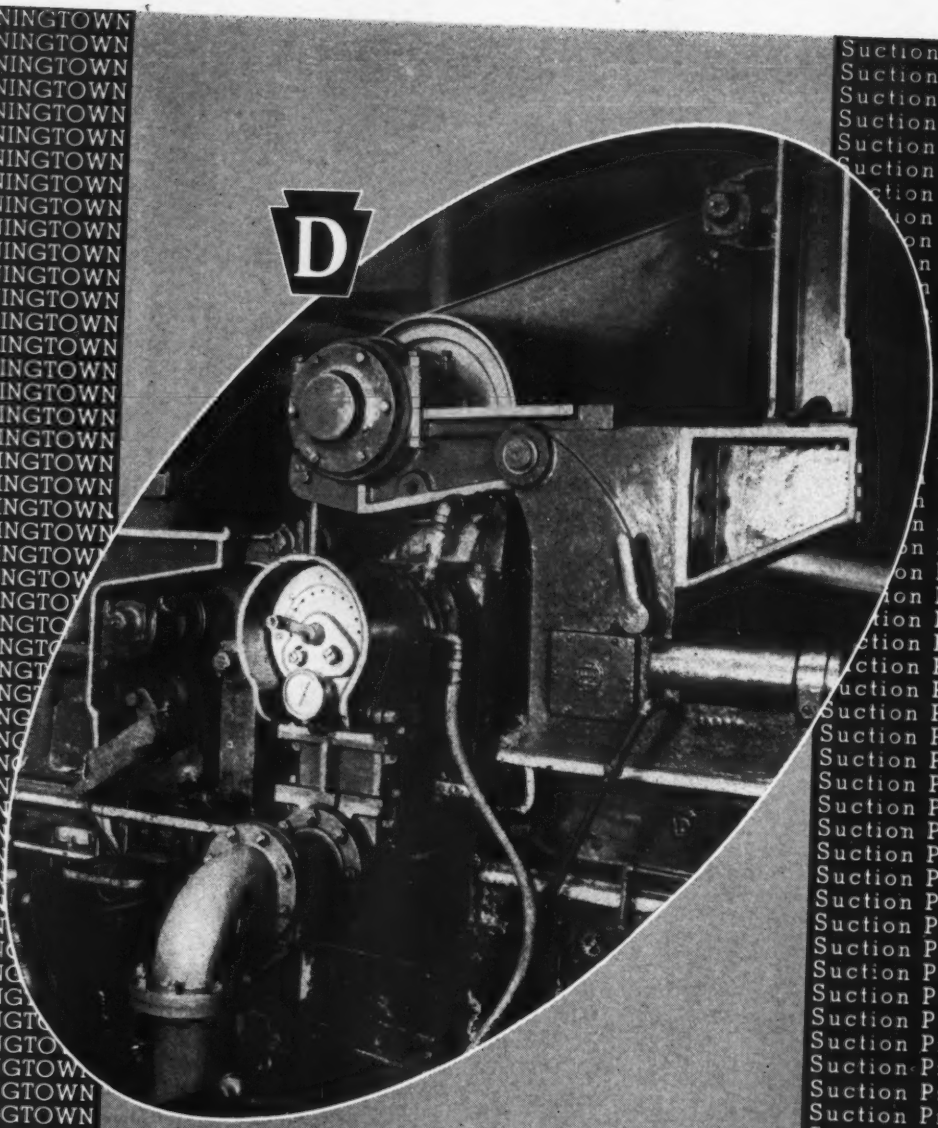

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PAPER TRADE JOURNAL

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CONTENTS

NOVEMBER 16, 1944

	PAGE
A.P.P.A. Will Not Hold Annual Convention	7
N.P.T.A. May Also Cancel	7
To Refund Fraser Co's. Bonds	7
CIO Wins at Wrenn Paper Co. Plant	7
Expects Small Exports from Scandinavia	10
Larger Demands on Canadian Supplies	10
Much Business Ahead for Equipment	10
An Experiment in Alcohol	10
U. S. Shows Interest in Quebec Co.	10
Many Mills Have Wood for Winter Operations	12
Addition to Bergstrom Warehouse Completed	12
Kimberly-Clark Hires War Veterans	12
Myles Reif Named Superintendent	12
Consolidated to Rebuild Flumes	12
Advises Sale of County Forest Crops	12
Marathon Contributes More to War Fund	12
Workers' Union Nominate Officers	12
Announce New Stein, Hall Officers	12
Chicago Fears Lifting of All Paper Curbs	14
Discusses Paper Outlook	14
M. & O. Head Speaks in Chicago	14
TAPPI Notes	14
Awards for Government Paper	16
Kalamazoo TAPPI Discusses Water	16
New Pulp and Paper Course	18
Watertown TAPPI Discusses Printing	18
Reliance Electric Changes	18
Financial News	20
New York Stock Exchange Quotations	20
New York Curb Exchange Quotations	20
Analyzes Financial Position of I.P.C.	20
Flintkote Nets $1.09	20
Scott Paper Earns Less	20
Crystal Tissue Profits Off	20
Container Corp. Earns 58 Cents	20
National Gypsum Nets 36 Cents	20
N.P.T.C. Net $3.74	20
United Paperboard Profits Up	20
Mead Corp. Profits Up	20
Editorial	22
Coming Events in Paper Industry	22
Fibrous Materials Shortage	22
WMC Starts Pulpwood Drive	22
Production Ratio Report	23
Paperboard Operating Ratio	23
Latest Market Review	36
Miscellaneous Markets	38
Market Quotations	38
Classified Advertising	42

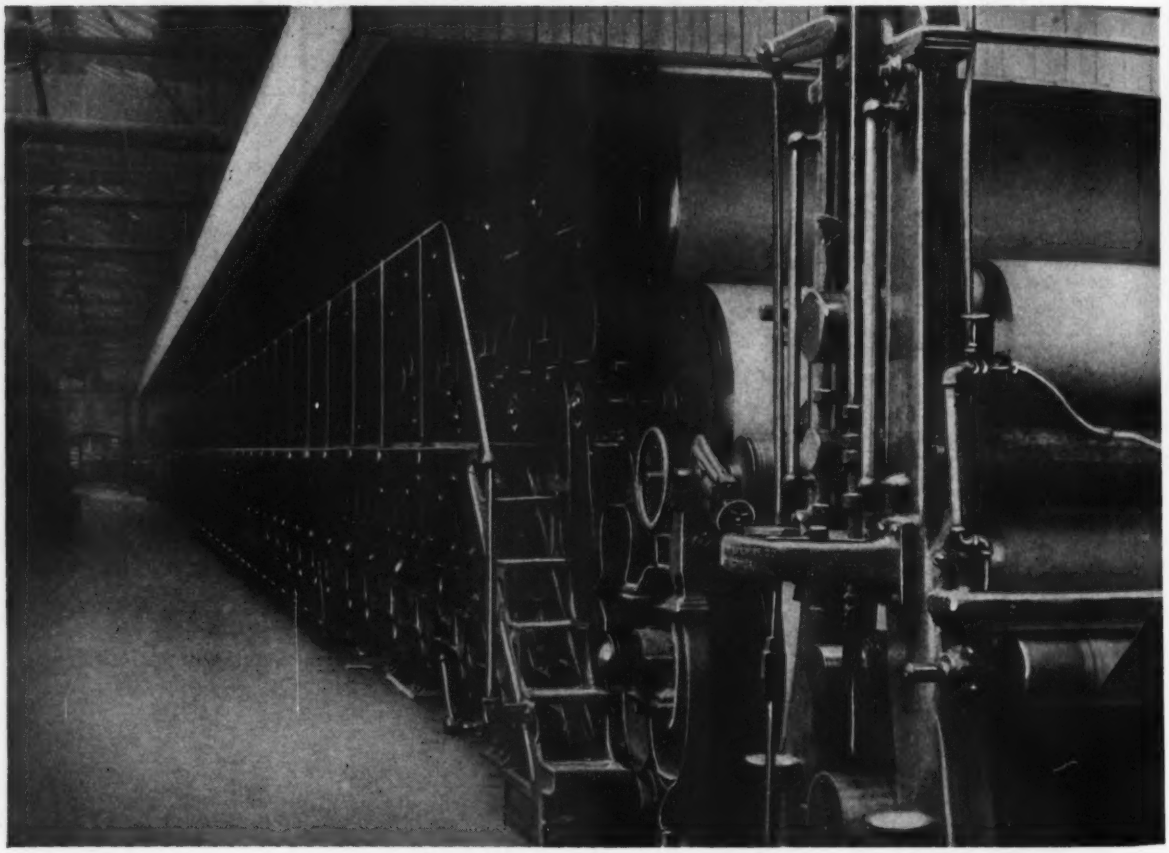
Technical Section *("TAPPI")*

Automatic Digester Control for Alkaline Pulp Cooking	25
The Alumina Content of Rosin-Free Handsheets in Relation to Tub Sizing	29
Coloring of Papers and Boards	33

PAPER TRADE JOURNAL IS INDEXED IN INDUSTRIAL ARTS INDEX

INDEX TO ADVERTISERS ON PAGE 50

BETTER *Lubrication* Means Better Maintenance



Is difficult maintenance a problem? Maybe excessive wear due to inefficient lubrication is the cause. That's where Sinclair specialized lubricants for PAPER MILL equipment can help.

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Vol. 119, No. 20

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

November 16, 1944

A.P.P.A. Will Not Hold Annual Convention

Only Such Meetings Will Be Held In Place of the Usual Convention As Are Necessary To Orderly Conduct of the Industry's Business — National Paper Trade Association May Follow Same Plan.

The American Paper and Pulp Association, because of war conditions, has cancelled its convention which is usually held at the Waldorf-Astoria Hotel, New York, the latter part of February. In place of the regular convention, only such meetings as are necessary to the orderly conduct of the business of the pulp and paper industry will be held. This, it is believed, is the first time in the history of the association, since its organization at Saratoga Springs, N. Y. in 1878, that it has not held an annual convention.

Notice of the Cancellation

E. W. Tinker, executive secretary of the association has issued the following notice announcing the cancellation of the convention:—

The American Paper and Pulp Association today announced the cancellation of its annual convention which is normally held in New York during the month of February. In place of the usual annual convention only such business meetings will be held as are necessary to the orderly conduct of the industry's business. Such business meetings, held during the month of February, will be in the main directed to matters pertaining to the industry's problems, in being of maximum aid in the prosecution of the war. These problems are many, involving the necessity for increased pulpwood production, the continuation of waste paper salvage campaigns, and the maintenance of mill operations in the face of acute labor shortages.

Maximum production of paper and paper products has become increasingly important in the war program. The tight paper supply situation that now exists would have been vastly worse except for the wholehearted cooperation, not only of the producers of paper, but of the consumers as well. When the history of the war is written it is believed that the cooperation between Government agencies and the paper industry, and within the paper industry itself, will stand out as a striking example of what can be done if there exists real appreciation of the need for cooperative effort, particularly on the part of private enterprises.

N. P. T. A. May Also Cancel

The National Paper Trade Association, while it had taken no definite action early this week, will, it is believed, following the lead of the American Paper and Pulp Association, cancel the convention which it has for a long number of years been accustomed to hold in February at the Waldorf-Astoria Hotel, New York.

The Technical Association of the Pulp and Paper Industry will, it is understood, probably hold its meeting according to plans already announced February 19-22, 1945 at the Commodore Hotel, New York.

To Refund Fraser Co's. Bonds

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., November 13, 1944—Arrangements for refunding of the bonds of Fraser Companies Limited and its subsidiary, Restigouche Company Limited, are announced.

In this connection, Fraser bonds are being called for redemption on January 1, 1945, at 103 and accrued interest, and Restigouche bonds on the same date at 101 and accrued interest. Both issues are payable as to principal and interest in U. S., Canadian or Sterling funds.

On the date of the Fraser Company's last financial statement, December 31, 1943, there were outstanding $5,529,500 Fraser 6% first mortgage bonds, due January 1, 1950, and $3,413,500 Restigouche 6% sinking fund mortgage bonds, due February 1, 1948.

Funds for the redemption of the outstanding bonds, a company announcement states are being provided in part by the issue of $7,000,000 Fraser 3½% 20-year first mortgage and collateral trust bonds, dated January 1, 1945, and maturing January 1, 1965, payable as to principal and interest in U. S. currency only.

The new bonds are being placed privately in the United States.

Balance of funds for redemption of the two outstanding issues will be provided out of the company's resources, it is announced.

Commenting on the announcement, the Financial Times says: "Substantial savings will accrue to Fraser Companies when the new financing to take care of the $5,529,500 6% mortgage bond issue is completed. The interest rate most frequently mentioned in connection with the new financing is 4% and common shareholders will be the beneficiaries to that extent.

CIO Wins at Wrenn Paper Co. Plant

The Paper Workers Organizing Committee—CIO has won the election held for the employees of the Wrenn Paper Company, Middletown, Ohio. The election was held under the direction of the National Labor Relations Board. The vote was 44 for the PWOC to 21 against.

Saturday, December 2nd, at 8:30 P. M.

ALLIS-CHALMERS Salutes the

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—Pays tribute to the Men and Women of this great industry on the famous

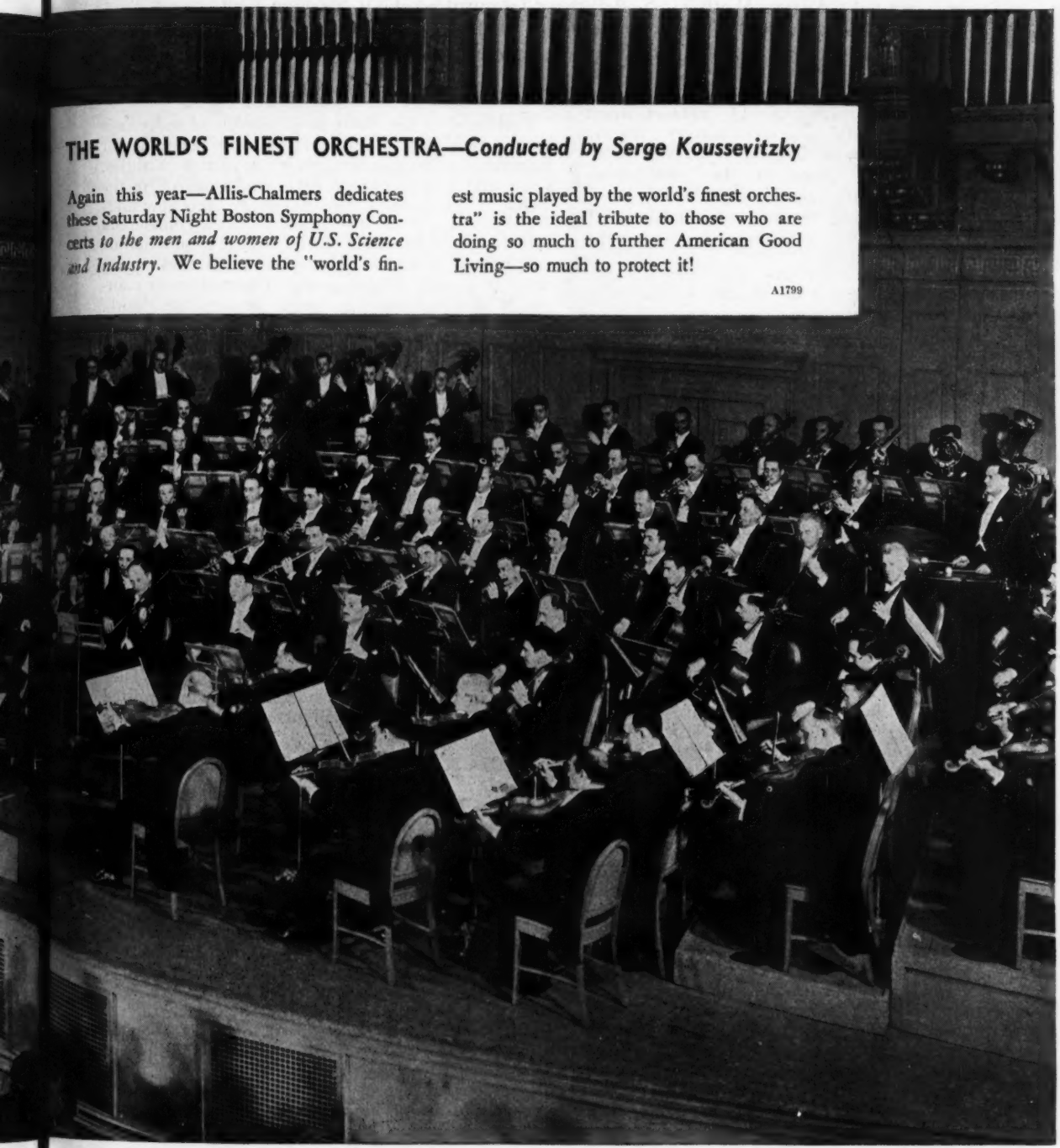
BOSTON SYMPHONY

Saturday Night Radio Program

TUNE IN THIS TRIBUTE. Listen and be proud as a nation-wide network of 189 radio stations tells America of your industry's great contribution to the war effort . . . the production records you and your associates have helped to set, the many ways your industry is helping to speed Victory! It's a salute to you . . . to every man and woman working in America's great Pulp and Paper Industry. Don't miss it!

Check Your Local Paper for Time and Station

ALLIS-CHAL

M. (E.W.T.) over 189 stations of the Blue Network

THE WORLD'S FINEST ORCHESTRA—*Conducted by Serge Koussevitzky*

Again this year—Allis-Chalmers dedicates these Saturday Night Boston Symphony Concerts *to the men and women of U.S. Science and Industry.* We believe the "world's finest music played by the world's finest orchestra" is the ideal tribute to those who are doing so much to further American Good Living—so much to protect it!

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"Engineering That Aids All Industry Furthers American Good Living"

November 16, 1944

Expects Small Exports From Scandinavia

Canada Agrees With U. S. Advisory Committee That Sweden Can Ship About 100,000 Tons of Newsprint After Blockade Is Lifted—Huge European Demand May Cut Deeply Into Pulp Exports.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., November 13, 1944—Current opinion in the industry here is in accord with the findings of the subcommittee of the U. S. Newspaper Publishers' Advisory Committee that even under favorable conditions after the Nazi blockade is lifted not more than half of Sweden's normal annual export of 200,000 tons of newsprint to the U. S. market can be expected to reach this side of the Atlantic. Concurrence is also expressed with the subcommittee's view that there is no evidence that Finnish pulp will become available to U. S. users.

The industry here has been keeping fully advised regarding forestry condtions in Europe, and has had also the advantage of close contact with British authorities who have detailed information regarding the effect, both currently and long-term, of the war on the outlook for supplies, not only of pulp and paper but of timber, from continental Europe. The findings, so far as can be ascertained, is that there has been such reckless exploitation of European forest resources by the Germans, coupled with wanton destruction and destruction incidental to military operations, that it will be a long time before overseas exports of pulp and paper can be resumed in any great volume by the Scandinavian countries.

Added to that is the prospect that the domestic demands of Europe on European supplies of forest products of all kinds will be enormously increased by the work of restoration of properties destroyed, by the widespread movement for the better housing of the people, and by the amazing impetus which the war has given to the use of wood as a basic material for the manufacture of new products from food and clothing to the ever-extending range of plastics.

Larger Demands on Canadian Supplies

As far as the British authorities are concerned, their attitude has found practical expression, as the war draws to a close, in an intensified program for providing years ahead for continuous and much larger supplies of timber, pulp and paper from Canada and Newfoundland.

To the above may be added the view of leaders in the industry here that manufacturing industries as a whole, and the public generally, have an entirely new conception of the potentialities of wood as a basic material, and that as a consequence new markets the full extent of which can only be guessed at, will be opened to the industry with the resumption of peace. The outlook of the industry regarding the prospective absence of intensified competition from Scandinavian sources in pulp and paper markets, combined with the prospective entrance of pulp and paper products into a wide range of entirely new uses, has communicated itself to the public and is reflected in the activity of pulp and paper securities on the Montreal Stock Exchange. For a considerable time past paper stocks have led all others in market operations, and during the past week this leadership has been more than ever in evidence, new highs being established in the market prices of practically all the leading pulp and paper companies' stocks.

Much Business Ahead for Equipment Concerns

Incidental to the above is a widespread movement among pulp and paper companies in planning for improving and expanding their productive facilities. Close and long-continued study and research in the technical and chemical departments are also now finding expression in completed plans for the commercial exploitation of by-products and for the production of wholly new products. The sponsors of these plans are only waiting for the easing of controls over manpower and materials to begin construction work. Manufacturers of pulp and paper equipment are being consulted every day in respect to these plans, and these manufacturers foresee great activity after the war both in renovating war-worn machinery and in supplying new equipment for expansion. Added to this are plans by all the leading companies for modernizing equipment to enable the mills to operate more efficiently and economically. They are able to do this because they are now in a better position financially than ever before in their history.

An Experiment in Alcohol

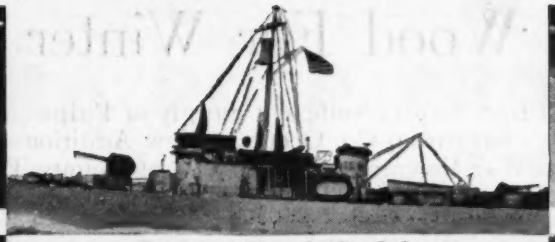
An illustration of the movement to explore new sources of revenue is supplied by the new plant of the Ontario Paper Company at Thorold, Ont., for the manufacture of ethyl alcohol from waste sulphite liquor. This plant was the result of a request of the Canadian Department of Munitions and Supply to assist in supplying the demands for this alcohol. They knew that waste sulphite liquor was being utilized for this purpose in certain plants in Europe. The company erected a plant at its own expense.

U. S. Shows Interest in Quebec Co.

Interest attaches to the fact that among the securities on the Montreal Stock Exchange during the past week have been those of the Quebec Pulp and Paper Company. These securities have long been dormant, due to the fact that the company is in bankruptcy and that for years its groundwood pulp mills and power plants in the Chicoutimi region of Quebec have been lying idle. The company was put in bankruptcy by the Quebec Government, to whom it owed water rentals in excess of one and three quarter million dollars, and is now being operated by a trustee. The company's mill at Chicoutimi has 50 pocket grinders and 50 wet machines and a capacity of 600,000 pounds of dry ground wood per 24 hours. Its mill at Val Jalbert has 10 pocket grinders. The only use made of the company's properties for years has been the operation of the machine shop in the Chicoutimi plant for the production of "bits and pieces" for war production needs.

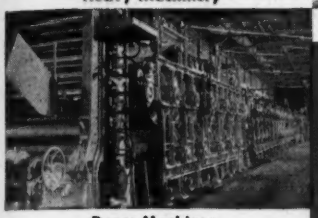
Lately it has been stated that the company has received an offer for its properties from United States interests operating in the specialty paper industry. It is known that the Quebec Government, the principal creditor, is anxious to clear up the whole case and particularly to see the mills in operation again, and it is inferred from the interest now being shown in the company's securities that the negotiations to this end promise to reach an early fulfilment.

Heavy Machinery

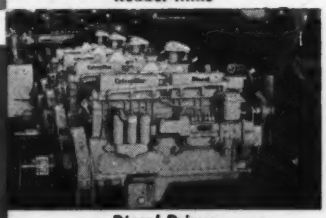


Destroyers — Tugs — Landing Craft

Rubber Mills

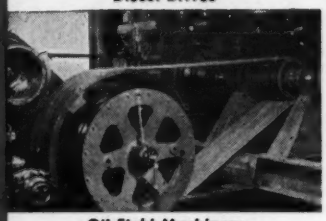


Paper Machines



Diesel Drives

Drags and Cranes



Oil Field Machinery

Mine Hoists

Steel Mills

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FAWICK *Airflex* CLUTCH

POWER CONTROLLED BY AIR

Mills Have Wood For Winter Operations

Fox River Plants Expect Sufficient Supply of Pulpwood To Avoid Shutdowns — Bergstrom Co. Occupies New Addition — Kimberly-Clark Hires War Veterans—Advises Sale of County Timber Now.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., November 13, 1944—Paper mills in the Fox River Valley will not face shutdowns next winter because of a pulpwood shortage, but the situation is still far from satisfactory.

The Interlake mill of the Consolidated Water Power and Paper Company, Appleton, an official estimated, has about a year's stock on hand and is not anticipating any difficulty in continuous operation.

The Combined Locks Paper Company, Combined Locks, Wis., has been using local wood, which with imported shipments, will enable it to operate throughout the winter.

An official of Kimberly-Clark Corporation, Neenah, Wis., said that the critical period in the pulpwood situation is not expected to ease until the War Production Board ends its control. One of the reasons for the shortening of pulpwood supplies is the nitrating pulp program for the war effort, it was said.

Heavy shipments from the Scandinavian countries are not expected until after Germany has been defeated. A shortage of manpower in the woods has been eased to some extent by the use of prisoners of war in the woods, but their production equals only about one-fifth of that of American workmen.

Addition to Bergstrom Warehouse Completed

Officials of the Bergstrom Paper Company, Neenah, Wis., last week took over the new $8,000 addition from the contractors. The addition, constructed on the top of the warehouse section of the Bergstrom mill, houses two of the most modern 25 by 50 locker rooms for men and women warehouse employes.

The women's locker room has 10 showers in the shower room, constructed in circular units, with five showers in each unit. There are toilets and a wash fountain constructed in a circular design. The lounge room has two tables and benches for eating lunch or for reading. The installations for two hair dryers have been made but as yet the company has been unable to secure dryers because of war production. There are five small mirrors and one full-length mirror.

The men's locker room has a shower room with one of the five shower units, toilet rooms, and a lounge room with tables and benches. The wash fountain is located in the lounge room.

Both locker rooms have acoustical tile ceilings and red tile floors. The walls are grey and off-white. An air conditioning unit for both locker rooms has been installed in the area which encloses the men's locker rooms.

Kimberly-Clark Hires War Veterans

The Lakeview mill of Kimberly-Clark Corporation at Neenah, Wis., has already re-hired 26 permanent and 3 temporary employes who are veterans of this war. Permanent employes are those who have been peace-time employes at the mill, and temporary men are those who are hired to fill vacancies due to induction of other permanent employes.

The rehabilitation of veterans program encompasses all of Kimberly-Clark's mills, and the reinstatement of men who have seen service at Lakeview mill is but an example of the work being done throughout the corporation's holdings.

Myles Reif Named Superintendent

Myles Reif, a former resident of Appleton, Wis., has been named general superintendent of the Blandin Paper Company at Grand Rapids, Minn., succeeding Paul Smith, who has retired.

Mr. Reif, a native of Milwaukee and a Marquette University graduate, was associated with the Kimberly-Clark Corporation at its Kimberly, Wis., mill before joining the Blandin company two years ago. Mr. Smith, formerly an official of the Combined Locks Paper Company, Combined Locks, Wis., is residing at Grand Rapids.

Consolidated To Rebuild Flumes

The Consolidated Water Power and Paper Company is planning to rebuild the flumes at its Interlake mill at Appleton, Wis. Cost of the work is estimated at $20,000, and the flumes will be built of steel and concrete. C. R. Meyer Construction Company, Oshkosh, Wis., has been given the contract.

Advises Sale of County Forest Crops

Withdrawal of more land from forest crop for sale of timber and pulpwood while forest products command a high price was advocated last week at a meeting of the Marinette County Taxpayers Association at Marinette, Wis. The association contended that the county could reduce the tax levy this fall by a substantial sum.

Marathon Contributes More to War Fund

A total of $1,625.10 was contributed to the War Funds drive by 1,034 employes of the Menasha division of Marathon Corporation, Menasha, Wis. The total exceeded last year's by $135.

Workers Union Nominate Officers

Members of the Kimberly Mill Workers Union of Kimberly-Clark Corporation's mill at Kimberly, Wis., nominated officers last week for the general election, which will be held early in December. About 600 votes were cast out of a possible 1,200.

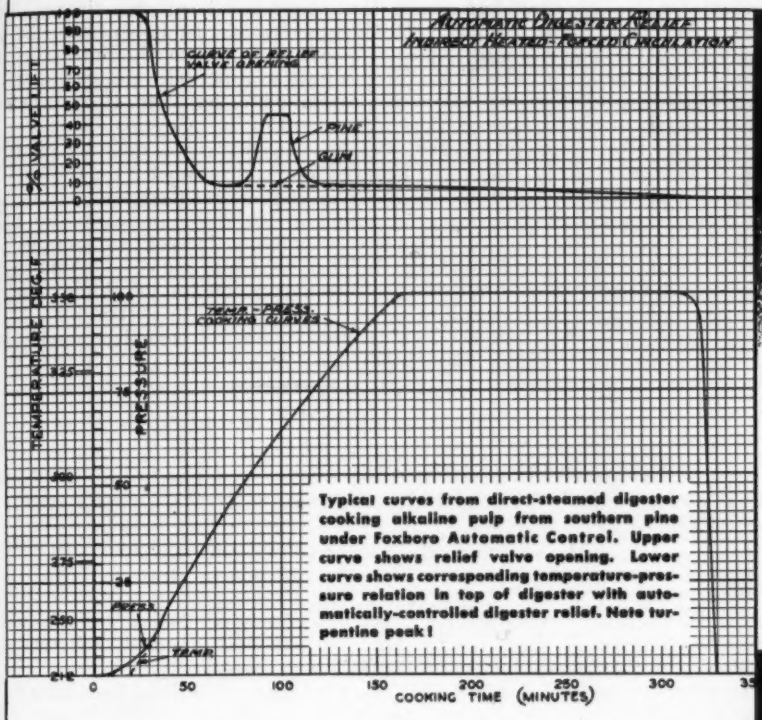
Announce New Stein, Hall Officers

Stein, Hall & Co., Inc., New York, manufacturers and distributors of starches, gums and dextrines, and importers of burlap and other commodities, has announced the election of Don. M. Hawley as vice-president in charge of sales for all Stein-Hall companies in the country. Mr. Hawley is a director of the New York company and general manager of Stein, Hall Manufacturing Company, Chicago.

Robert M. Stein, secretary of the New York company, has been elected vice-president. L. F. Turnbull, H. R. Barnett, J. A. Lowander and H. M. Johnston, product managers, have been elected assistant vice-presidents.

EXTRA PULP PROFITS

from a Compact, Engineered "Package"!



Typical curves from direct-steamed digester cooking alkaline pulp from southern pine under Foxboro Automatic Control. Upper curve shows relief valve opening. Lower curve shows corresponding temperature-pressure relation in top of digester with automatically-controlled digester relief. Note turpentine peak!

Foxboro Automatic Digester Control Unit for fast cooks. Top instrument is Foxboro's new electronic Dynalog Temperature Recorder . . . faster-acting, more sensitive. Beneath is Foxboro Digester Relief Controller. Its action is governed by measurement of temperature-pressure relation in relief gas.

Foxboro Automatic Digester Control Unit for slow cooks requiring controlled rate of temperature rise. Dynalog Temperature Recorder at top. Beneath are Foxboro Digester Relief Controller and Foxboro Cooking Schedule Controller with cam-set control point.

A Foxboro Automatic Digester Control System offers higher fiber yield, lower alkali consumption

Consider what you'd stand to gain if your yield-per-digester could be stepped-up 1% . . . or even 1/10 of 1%. That will give you a rough idea of the *extra pulp profits* many mills are now getting from installations of Foxboro Automatic Digester Control Systems!

These efficiency-boosting control systems are designed as complete units, readily adaptable to any type of alkaline digester installation. Automatically, they maintain such close control of cooking time, temperature and relief that wasteful operating variations are held to new minimums. Steam, chemical and labor requirements are reduced . . . both pulp quality and uniformity are substantially improved.

Write for complete information on these new Foxboro "packaged profit-builders" for alkaline pulp digesters. Also details of similar Foxboro Control for sulphite processes. The Foxboro Company, 114 Neponset Avenue, Foxboro, Mass., U. S. A. Branches in principal cities.

FOXBORO
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Automatic
DIGESTER CONTROL

Chicago Fears Lifting of All Paper Curbs

Belief Gaining That Selective Control Must Be Continued After War To Assure Fair Distribution of Paper — Executive Discusses Paper Outlook — Donald Davis of WPB Addresses Advertisers.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., November 13, 1944—The paper market in and around Chicago gave added evidence this week of the stringent tightness in the paper situation. Sales offices report an actual increase in demands from military circles and the visits to the mills to determine allocations are getting to be more and more of a difficult matter. Specifically, the kraft and folding and setup box outlets here seem to be having the most difficult time but those papers termed "military" and including a wide range of bonds, ledgers and various grades of sulphites are in real difficulty. There is an increasingly pronounced belief that not only will the shortages continue until long after the cessation of hostilities but the controls, in many instances, will also remain in effect. There is reportedly a genuine fear on the part of many paper trade executives that a wholesale lifting of controls without regard for market conditions would produce a most illogical and harmful effect on the over all picture. Selectivity of controls and their abandonment at the proper time is considered, by many leaders in the industry as a major problem for the immediate post-war period.

Discusses Paper Outlook

Reuben Swan, sales executive of the Champion Coated Paper Company and a prominent speaker on problems pertaining to the paper industry, was the guest speaker at the regular monthly meeting of the Paper Group of the Purchasing Agents Association of Chicago at its meeting on October 31 at the Hotel Sherman. About fifty members and guests were present to hear Mr. Swan discuss the immediate and future outlook in the paper industry. The meeting was presided over by Group Chairman F. W. Sinsabaugh of Bradner Smith & Company, Chicago paper jobbers. Mr. Swan covered the immediate and future problem in a general way and outlined various factors which would affect the supply and purchase problems of individuals buying for civilian usage. Mr. Swan estimated that it might take from ten months to a year for the paper market to be free of various restrictions and impediments—the length of time dating from the termination of hostilities. He pointed out the vast demand for paper in demobilizing the American military forces and indicated the types of paper that would be in tremendous demand from the military for these purposes. The speaker also said that in his opinion certain restrictions would remain in effect for some time in the post-war period to insure against a disorderly scramble for much needed goods and to make the transfer from a war to a peace time economy productive of the most jobs and of the retention of a high level of employment in America.

M. & O. Head Speaks Here

Donald D. Davis, executive vice-president of the Minnesota and Ontario Paper Company, addressed members of the Financial Advertisers Association at the annual banquet of that Association held October 28 at the Edgewater Beach Hotel, Chicago. For the past two years Mr. Davis has been vice chairman of the War Production Board. In his message he brought repeated reassurance as to the intentions of the WPB in the post war period. He said that in his years of service with the War Production Board in Washington and in his participation in its administration and to some degree its determination of policies he believed he could say that " the present chairman and the Washington and field staff of that agency are continuing to make comprehensive and effective progress not only in the policies and the regulations required for the maintenance of essential war production but in preparation for the elimination of controls when the state of the war so permits."

Mr. Davis added that "there is a complete absence of any thought of control for control's sake."

TAPPI Notes

Robert E. Armstrong, formerly with the Hawley Products Company, is now research chemist for the Continental Can Company, 4645 W. Grand avenue, Chicago, 39, Ill.

Benton R. Cancell has been appointed deputy director of the Forest Products Bureau, W.P.B., Washington, D. C.

Edward P. Wood, formerly of the Weyerhaeuser Timber Company, is now assistant mill manager, Hollingsworth & Whitney, Mobile, Ala.

Oren A. Mason, formerly of the Port Royal Pulp and Paper Company, is now testing station foreman, Spruce Falls Pulp and Paper Company, Kapuskasing, Ont.

J. L. Van Nort, paper mill application engineer, has succeeded R. H. Smith as representative of the Reliance Electric and Engineering Company in TAPPI.

Printing plant and bindery manpower difficulties have delayed the distribution of Technical Association Papers to members of TAPPI. Although the material has been in press for the past few months it has been impossible to move this large volume through as rapidly as in former years. It is hoped that it will be in the mails within the next few weeks. The abnormal delay is regretted by all concerned.

J. Allen Millar Retires

The Perkins - Goodwin Company, New York, announces that J. Allen Millar, vice-president and treasurer of the company has decided to retire from business.

Mr. Millar has been an officer of the company for sixteen years and retires in the prime of life at his own request. He has been very largely responsible for the pulp department of the Perkins-Goodwin Company.

John Lindroth, who has been associated with the company for many years has been elected vice-president to succeed Mr. Millar. The position of treasurer will remain unfilled for the present.

BASIC ★ ★ ★

IN YOUR PLANS TO KEEP POSTWAR

MAINTENANCE COSTS DOWN . . .

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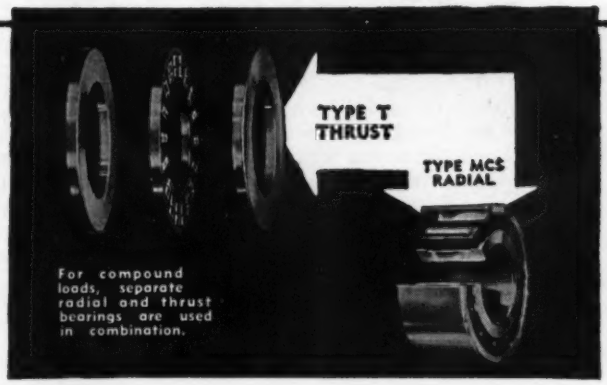

Costs must come down—especially maintenance costs—if you want to weather the storms that peacetime readjustment of prices, markets and competition will bring.

So make a practical start now. Change over your production machinery to Rollway's right-angle bearing loading. That will cut maintenance cost and replacement cost . . . it will free your production machinery from frequent shut-downs for bearing replacements.

Design your postwar products around the Rollway bearing principle, too. You'll get higher load capacity and longer life expectancy in given dimensional limits. You'll get more compact design, a better operating, more satisfactory product with less maintenance trouble.

Right-Angle Loading Reduces the Unit Load

Rollway's right-angle Bearings limit the load carried by each bearing to a single load component —either *pure radial* or *pure thrust*. The unit load per roller is lower, the load capacity for a given dimension is higher. No oblique loads or resultants, no compound loads of any kind can pile up to increase the computed load beyond the elastic limits of the structure or housing. Resistance to shock and vibration is increased. Pinch-out of rollers is eliminated—there's less end-rub, less wear-back of roller ends. Longer bearing life and lower maintenance and replacement costs are normal results.

Standard Sizes for Most Applications

S.A.E., or American Standard metric dimensions and tolerances assure low cost and ready availability for most applications. Let our engineering specialists help you in making a correct selection. Just send a drawing or detailed description. No charge or obligation for a free, confidential analysis and recommendation.

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SALES OFFICES: Philadelphia • Boston • Pittsburgh • Youngstown • Cleveland • Detroit • Chicago • St. Paul • Houston • Tulsa • Los Angeles

Awards for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 15, 1944—D. L. Ward Company has been awarded the contract for furnishing the Government Printing Office with 200,000 pounds of offset book paper at 8.34 cents Other awards for paper bought on the open market include the following.

Wilcox, Walter Furlong Paper Company will furnish 259,500 pounds of white book paper at 7.82 cents and R. P. Andrews Paper Company will furnish 20,000 sheets of parchment paper at $150.00 per M sheets. Walker, Goulard Plehn Company will furnish 80,000 pounds of bristol paper at 6.25 cents and Bulkley Dunton & Co. will furnish 150,000 pounds of white writing paper at 6.25 cents.

Walker, Goulard Plehn Company will furnish 90,000 pounds of white writing paper at 6.25 and International Paper Sales Company will furnish 120,000 pounds of standard newsprint paper at $58.00 per ton. Walker, Goulard Plehn Company will furnish 100,000 pounds of white writing paper at 8.5 cents and the Flambeau Paper Company will furnish 50,000 pounds of yellow writing paper at 8.85 cents.

Consolidated Water Power and Paper Company will furnish 40,960 pounds of white M.C. paper at 6.22 cents and D. L. Ward Company will furnish 20,608 pounds of offset paper at 12.75 cents. R. P. Andrews Paper Company will furnish 100.000 pounds of white book paper at 8.38 cents; 100,000 pounds of same at the same price and another 100,000 pounds of same at the same price.

R. P. Andrews Paper Company will furnish 150,000 pounds of white poster paper at 7.8 cents and Columbian Paper Company will furnish 80,000 pounds of green bristol board at 6.6 cents. Walker, Goulard Plehn Company will furnish 100,000 pounds of offset paper at 7.65 cents. The same firm will also furnish 200,000 pounds of deferier paper at 7.65 cents, and the Port Huron Sulphite and Paper Company will furnish 200,000 pounds of white mfg. paper at $3.80 per ream.

Northwest Paper Company will furnish 100,000 pounds of white writing paper at 7.57 cents; 100,000 pounds, 50,000 pounds, and 100,000 same at same price.

Barton, Duer & Koch Paper Company will furnish 16,420 pounds of white index paper at 16 cents and same company will furnish 16,420 pounds of yellow index paper at 16.73 cents, and same firm will furnish 16,420 pounds of salmon index at 16.73 cents. Barton, Duer & Koch Paper Company will furnish 40,000 pounds of book paper at 7.4 cents.

Mead Sales Company will furnish 200,000 pounds of white book paper at 8.14 cents, and R. P. Andrews Paper Company will furnish 100,000 pounds of white writing paper at 7.27 cents. Stanford Paper Company will furnish 9,650 sheets of text paper at $38.29 per M sheets and Consolidated Power and Paper Company will furnish 80,000 pounds of white M.C. paper at 6.46 cents.

Consolidated Water Power and Paper Company will furnish 151,996 pounds of white M.C. paper at 7.43 cents and Paper Corp. of U. S. will furnish 50,000 pounds of gray fold bristol at 10.75 cents. Stanford Paper Company will furnish 10,550 pounds of white ledger paper at 29 cents and same firm will also furnish 12,800 pounds of same at the same price. Barton, Duer & Koch Paper Company will furnish 17,750 pounds of white ledger paper at 23.78 cents.

Mudge Paper Company will furnish 80,000 pounds of 5% rag white index paper at 15.27 cents and Mead Sales Company will furnish 100,000 pounds of white M.F. book paper at 7.46 cents. International Paper Company will furnish 289,695 pounds of white C.W. index paper at 6.17 cents.

Marquette Paper Company will furnish 43,000 pounds of white book paper at 7.1 cents and the same firm will furnish 11,000 pounds of white book paper at 7.46 cents. Mudge Paper Company will furnish 100,000 pounds of white writing paper at 8.78 cents and Mead Sales Company will furnish 80,000 pounds of cover paper at 3.9 cents. R. P. Andrews Paper Company will furnish 40,000 pounds of kraft paper at 4.65 cents and D. L. Ward Company will furnish 257,712 pounds of white ledger paper at 9.6 cents and the Stanford Paper Company will furnish 15,000 pounds of white writing paper at 7.63 cents. The same firm will also furnish 100,000 pounds of same at the same price. New York & Pennsylvania Company will furnish 58,000 pounds of white writing paper at 7.37 cents and the Mead Sales Company will furnish 149,910 pounds of white book paper at 7.46 cents. Central Ohio Paper Company will furnish 54,000 pounds of white cover paper at 10.25 cents and the Old Dominion Paper Company will furnish 40,000 pounds of buff blotting paper at 11.47 cents. Walker, Goulard Plehn Company will furnish 279,760 pounds of ground wood writing paper at 7.4 cents and the same firm will also furnish 235,000 pounds of V mail writing paper at 7.15 cents. Whitaker Paper Company will furnish 81,000 pounds of white writing paper at 7.98 cents.

Kalamazoo TAPPI Discusses Water

The second meeting of the Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry was held Thursday, November 2 at the Columbia Hotel. About forty members and guests attended the dinner and others arrived for the post-dinner paper presentation and ensuing discussions.

Lewis B. Miller, affiliated with W. H. & L. D. Betz and chairman of the TAPPI water committee, presented a paper on the effects of water impurities in process water for fine paper manufacture. Each of the common impurities was mentioned and its individual effect on the finished sheet was discussed. The paper sought to establish maximum limits of these impurities which would still permit the manufacture of a high quality sheet. Mr. Miller also submitted a hypothetical water analyses and indicated the processing which would be necessary to condition the water to the maximum limits.

The reading of this paper served as a starting point for presentation of problems of water treatment which face local mills. Those most active in these discussions were: A. L. Sherwood, Frank Libby, W. F. Hathaway, James A. Wise, Merle Wilkins, W. A. Kirkpatrick and Mr. Miller.

Those present included Ken Adams, P. D. Applegate, Ralph Atkins, W. J. Cassidy, A. W. Cole, C. T. Colgren, Wm. G. Curry, W. L. Davis, J. A. Dean, G. F. Des Autels, L. E. Fitzgerald, Myron F. Flotow, Merton S. Fogerty, B. E. Freeman, Charles E. Garden, R. C. Germanson, F. R. Hamilton, W. F. Hathaway, W. A. Kirkpatrick, Bill Kottman, Stephen Kukolich, Frank Libby, R. T. Mashburn, Lewis B. Miller, L. Mimms, Lee Monroe, Harley E. Nelson, Howard Roderic, A. L. Sherwood, Harold Sinclair, E. B. Taylor, Floyd Thomas, W. R. Tobin, W. E. Trennepohl, H. L. Vanderberg, Bill White, Frank Whittington, Merle R. Wilkins, and James A. Wise.

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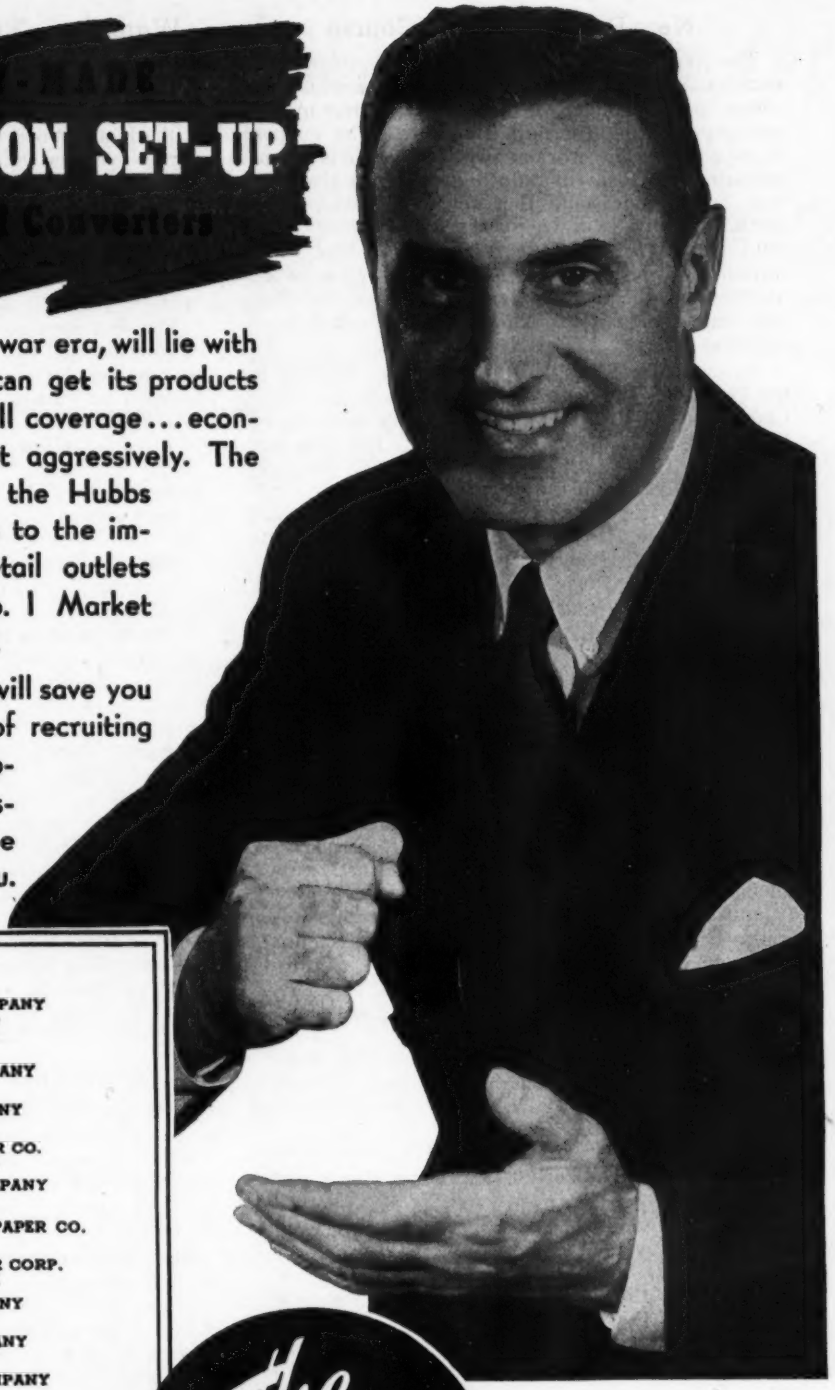

The advantage, in the post-war era, will lie with the mill or converter that can get its products to market with fast, over-all coverage . . . economically, smoothly and yet aggressively. The combined sales staffs of the Hubbs Houses have ready access to the important industrial and retail outlets throughout America's No. 1 Market . . . from Indiana eastward.

Perhaps our organization will save you the expense and delays of recruiting new salesmen. We can provide a complete merchandising service. Contact the Hubbs House nearest you.

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ESTABLISHED IN 1855

New Pulp and Paper Course

The pulp and paper industry and cooperating vocational schools in the Fox River Valley in Wisconsin have announced a nontechnical course in pulp and papermaking for mill employees. The purpose is to acquaint the workers with the various manufacturing processes in pulp and paper so that they may better understand the industry in which they work. Lectures will be given from November 8th until February 14th at the Vocational School Auditorium in Appleton, Wis. Most of the lecturers are members of the Technical Association of the Pulp and Paper Industry. Following is the schedule of lectures:

November 8, 1944: History of Paper Making in the Fox River Valley, by A. G. Wakeman, Kimberly-Clark Corporation. Trends in the Paper Industry by Otto Kress, Inst. of Paper Chemistry. The Pulp and Paper Industry, It's Future by John G. Strange, I.P.C.

November 15, 1944: Fibers and Other Materials Used in Paper Making by Loren Forman, Institute of Paper Chemistry.

November 22, 1944: Wood Preparation by R. F. Rogers, Kimberly-Clark Corporation. Groundwood Preparation by L. J. Smith, Combined Locks Paper Company.

November 29, 1944: Sulphite Pulp by W. H. Swanson, Kimberly-Clark Corporation. Sulphate and Soda Pulp by P. H. West and M. L. Downs, Thilmany Pulp and Paper Company.

December 6, 1944: Flax, Rag and Straw Preparation by H. P. Dixson, Jr., Fox River Paper Corporation and T. R. Probst, Gilbert Paper Company.

December 13, 1944: Waste Paper Utilization and Deinking Processes by S. D. Wells, Inst. Paper Chemistry.

January 10, 1945: Stock Preparation and Its Relation to Paper Machine Operations by F. X. Kreiling, Thilmany Pulp and Paper Company, I. J. Stafford, Neenah Paper Company, Harold Johnson, Fox River Paper Company, and A. Wiberg, Gilbert Paper Company.

January 17, 1945: Paper Machines—1. The Industry's Requirements by Fred S. Seaborne, Kimberly-Clark Corporation, and 2. What Has Been Done by P. H. Tigwell, Beloit Iron Works.

January 24, 1945: Finishing and Conversion by I. W. Kersten, Kimberly-Clark Corporation, and M. L. Downs.

January 31, 1945: Paper Specifications, Testing and Sampling by J. B. Catlin, Kimberly-Clark Corporation.

February 7, 1945: Costs and Sales by Richard K. Neller, Kimberly-Clark Corporation.

February 14, 1945: Maintenance of Mechanical Equipment by J. A. Foley, Kimberly-Clark Corporation.

Certificates of attendance at these meetings will be presented at this meeting by John H. Graff, Institute of Paper Chemistry.

Ed. Note: This is the third educational program being offered in the pulp and paper industry this year. Others include the course given by members of the staff of the Crown Zellerbach Paper Company at Camas, Wash., and the course given at St. Joseph's College in Philadelphia. Programs such as these are very constructive and enable the various TAPPI local sections to perform a real service to their communities.

Watertown TAPPI Discusses Printing

A dinner meeting of the Northern New York Group of the Empire State Section of the Technical Association of the Pulp and Paper Industry was held at the Hotel Woodruff, Watertown, N. Y., on Thursday, November 9th at 7:00 P.M. The theme of the meeting was Printing. All printers in and around the vicinity of Watertown were invited to attend.

Following dinner a technicolor sound film on the manufacture of printing inks entitled "Keeping in Touch" was shown through the courtesy of International Printing Ink Corporation.

The first speaker was J. W. Viner, vice president of International Printing Ink Corporation, who talked on some of the latest developments in printing inks. Samples of various types of materials printed with these inks were displayed. Mr. Viner placed emphasis on the new aniline inks used in printing with rubber plates. Mr. Elmer Denny of the Ideal Roller and Manufacturing Co., Inc., discussed the manufacture of the various types of rollers used on printing presses and had miniature rollers for inspection. The meeting was concluded with a talk by Norman L. Rowe, general manager of the Ideal Roller and Manufacturing Company, Inc., on the development of synthetic rubber for printing rollers. H. A. Spencer, of Knowlton Brothers presided at the meeting and announced the next dinner meeting would be held Thursday, December 14 at the Hotel Woodruff, when the subject would be Plastics. Those present included: Wilfred Arsenault, Milton Bisha, Wes Coburn, W. J. Cornell, A. Dacier, Elmer Denny, Vernon Eager, I. J. Earle, L. A. Flick, C. E. Foster, Earl Foster, George E. Fromm, E. A. Godfrey, H. C. Harmibrook, F. J. Hoar, T. J. Huttemann, C. T. Jewell, G. S. Jones, F. L. Lang, A. B. Leachy, Tom Loessi, D. C. Mather, Ed Moncalieri, Ken Moore, W. D. Myers, F. C. O'Brien, Jay Ormsby, A. C. Payne, Leo Paradis, Henry Perry, Tony Reese, John H. Rich, Norman L. Rowe, Tom Sayer, H. A. Spencer, P. D. Switzer, B. H. Treadwell, J. H. Treadwell, J. W. Viner, Frank A. Walker, and Nathan M. Wood.

Reliance Electric Changes

S. B. Taylor, manufacturing vice president of the Reliance Electric and Engineering Company, announces organizational changes which give added responsibilities to three of the company's production heads in a move to integrate manufacturing facilities for postwar.

Both the Reliance Marine Plant and Plant No. 2 are to be brought together as a self-contained Marine Division, under Manager Karl H. Meyer. Mr. Meyer, chairman of the Cleveland Chapter of The American Society of Tool Engineers, has been with Reliance ever since his graduation from Case School of Applied Science as a mechanical engineer in 1926, and has been superintendent of the Marine Plant as well as works engineer at the main plant. W. H. Haber, with Reliance 11 years, is to be production manager of this division in which will henceforth be concentrated the long run manufacture of the smaller Reliance equipment.

Larger and more specialized equipment will continue to be produced at the main plant, now to be known as the Ivanhoe Division. Appointed as manager of this division is Robert W. Cornell, who came to Reliance in 1930, after attending Syracuse University and the Harvard Graduate School.

Are You Using Hooker Chlorine for Slime Control?

Of increasing interest to pulp and paper manufacturers is the use of chlorine in the abatement and control of costly "slime" growths and deposits in condenser tubes. Many mills report especially gratifying results when chlorinated water is used throughout their systems. A real dollar saving results as well as production of cleaner paper products.

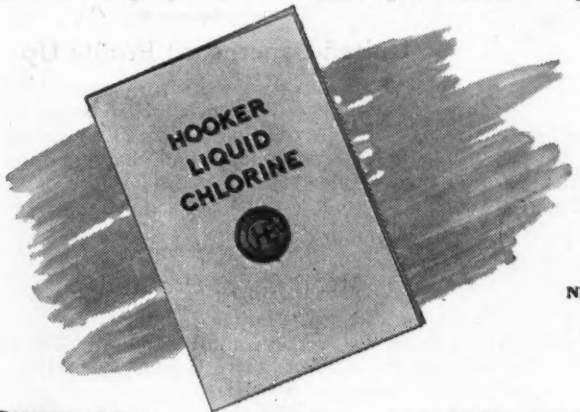
Hooker chlorine has been the choice in pulp and paper mills because of its consistently uniform high quality. Hooker's Technical Staff, too, is at your service in helping you solve any problems involving the use of chlorine and other Hooker chemicals.

ARMY E NAVY

HOOKER CHEMICALS

Send for this Hooker Chlorine Booklet

Have you requested your copy of the Hooker "Liquid Chlorine" booklet? It contains helpful information of particular value to new employees. It includes precautions for handling and equipment suggestions as well as physical and chemical data on liquid chlorine. Copies are free when requested on your letterhead.



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FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending November 11, 1944

STOCKS

	High	Low	Last
A. P. W.	3⅜	3⅜	3⅜
Armstrong Cork Co.	43½	43⅛	43¼
Celotex Corp.	13⅜	13¼	13¼
Celotex Corp., pf.	18½	18¼	18½
Certain-Teed Products Corp.	7¾	7⅝	7½
Certain-Teed Products Corp., pf.	131	127¼	127¼
Champion Paper & Fibre Co.	30	29	30
Champion Paper & Fibre Co., pf.	113⅝	113	113⅝
Congoleum Nairn Co.	25⅛	24⅜	25
Container Corp. of America	27¾	27¼	27¼
Continental-Diamond Fibre Co.	11⅛	10¾	11⅛
Crown-Zellerbach Co.	20½	20⅛	20½
Crown-Zellerbach Co., pf.	104½	104	104
Dixie Cup Co.	18⅜	18⅛	18⅜
Dixie Cup Co.,—A.	47⅜	47	47⅜
Flintkote Co.	23⅛	22⅝	22⅝
Flintkote Co., pf.	109¼	109¼	109¼
Robert Gair	4⅝	4½	4⅝
Robert Gair, pf.	16¼	15¾	16¼
International Paper Co.	20	19½	19¾
International Paper Co., pf.	91	89	91
Johns-Manville Corp.	98⅞	97	98⅞
Johns-Manville Corp., pf.	...	...	...
Kimberly-Clark Corp.	36½	36⅛	36½
MacAndrews & Forbes	28½	28½	28½
MacAndrews & Forbes, pf.	...	...	...
Masonite Corp.	42	41¾	42
Mead Corp.	11¾	11⅝	11⅝
Mead Corp., pf. A—6%	100	99	99½
Mead Corp., pf. B—5½%	93½	91½	93½
National Container Corp.	11⅞	11⅝	11¾
Paraffine Companies, Inc.	58⅞	58	58⅞
Paraffine Companies, Inc., pf.	...	...	...
Rayonier, Inc.	16¾	15½	16¼
Rayonier, Inc., pf.	34½	34½	34½
Ruberoid Co.	33¾	32½	33¾
Scott Paper Co.	44	44	44
Scott Paper Co., pf.	114	114	114
Sutherland Paper Co.	30	30	30
Union Bag & Paper Corp.	14⅜	13⅞	14⅜
United Paperboard Co.	7	7	7
U. S. Gypsum Co.	76¼	75¼	75¼
U. S. Gypsum Co., pf.	180	180	180
West Virginia Pulp & Paper Co.	24	23⅝	24
West Virginia Pulp & Paper Co., pf.	...	...	...

BONDS

Abitibi Pulp & Paper Co. 5s '53	91⅜	89¼	91⅜
Celotex Corp. 3¾s '55	104	104	104
Certain-Teed Products Corp. 5½s '48	102	101¾	101¾
Champion Paper & Fibre Co. 4¾s '50	...	...	...
International Paper Co. 6s '55	108	107½	107½
International Paper Co. 5s '47	103½	103½	103½
Mead Corp. 3½s '53	...	...	...
West Virginia Pulp & Paper Co. 3s '54	...	...	...

New York Curb Exchange

High, Low and Last for Week Ending November 11, 1944

STOCKS

	High	Low	Last
Great Northern Paper Co.	...	...	...
Hummel-Ross Fibre Corp.	7½	7⅛	7⅜
St. Regis Paper Co.	5¾	5⅝	5⅝
St. Regis Paper Co., pf.	...	...	...
Taggart Corp.	5¾	5¾	5¾

BONDS

American Writing Paper Co. 6s '61	...	...	...

Flintkote Nets $1.09

The Flintkote Company for the forty weeks of October 7, reports a net income of $1,159,163, equal to $1.09 a share, compared with $874,080 or $1.04 a share, for 1943 period; net sales, $28,717,532 compared with $23,368,013.

Scott Paper Earns Less

The Scott Paper Company for the nine months, after provision for preferred dividends, reports consolidated net earnings were $973,226, equal to $1.45 a common share, against $998,619 or $1.49 a share, last year.

Crystal Tissue Profits Off

The Crystal Tissue Company for the nine months, reports a net income of $61,377, or 50 cents a common share, compared with revised net of $104,573, or 96 cents a share, last year.

Analyzes Financial Position of I.P.C.

A study of the financial status of the International Paper Company, just issued by Goodbody & Co., New York, presents much information on the important products of the company, its operating results and the present investment position of the preferred and common stocks.

The report analyzes the kraft paper, newsprint and miscellaneous paper items manufactured by International. It gives a tabulation of sales, gross and net income and per share earnings on the common stock from 1936 to 1940, etc.

The conclusion is stated that, it would appear that the paper industry is in an excellent position to report good profits over the next few years; that International Paper appears to be in a favored position because of its heavy interest in the growing kraft paper and board business, the notable improvement in finances and capitalization and the high earnings potential under favorable conditions such as are expected after the war.

Container Corp. Earns 58 Cents

Consolidated net profit of Container Corporation of America for the three and nine month periods ended September 30, 1944, amounted to 58 cents per share and $2.11 per share, compared with 68 cents per share and $1.74 per share for the similar periods of 1943.

Shipments for the nine month period ended September 30, 1944, were $52,488,000 as compared with $44,624,000 for the corresponding nine months period in 1943, an increase of 18%.

National Gypsum Nets 36 Cents

The National Gypsum Company and subsidiaries for the nine months, reports a net profit of $714,455, equal to 36 cents each on 1,357,454 common shares, against $686,026 or 35 cents each on 1,339,499 shares last year; net sales, $18,479,232 against $16,105,528. September quarter net, $219,684 or 10 cents a share on net sales of $6,412,253, against $243,368 or 13 cents a share on net sales of $5,520,236 in 1943.

N.P.T.C. Net $3.74

The National Paper and Type Company and subsidiaries for the year to August 31, reports a net profit of $278,193, equal to $3.74 each on 64,392 common shares after preferred dividends and a war-time reserve of $50,000, compared with a net profit of $265,518, or $3.54 a common share, in year to August 31, 1943.

United Paperboard Profits Up

The United Paperboard Company and subsidiaries, three months ended August 31, reports sales of $1,422,032 compared with $1,197,921 a year ago; net income $51,832, after taxes and charges, equal after preferred dividends to 16 cents a share on 240,000 common shares; a year ago $25,633 and 5 cents a share.

Mead Corp. Profits Up

The Mead Corporation for the forty weeks to September 30, reports a net profit of $795,120, or 64 cents a common share, against $768,419, or 59 cents a share last year.

how Stainless sends pulping costs down

Low-cost pulp production is a vital first-step in the manufacture of high-quality, profitable paper. ARMCO Stainless Steels can be an important help to you here.

In both sulphate and sulphite pulping, the right grade of stainless gives equipment longer life. This is especially valuable in the case of corrosive sulphite pulping.

For one thing, ARMCO Stainless Steel eliminates the danger of rust contamination. The smooth surface encourages an even flow of material, resists abrasion, promotes better agitation, and retards slime deposits.

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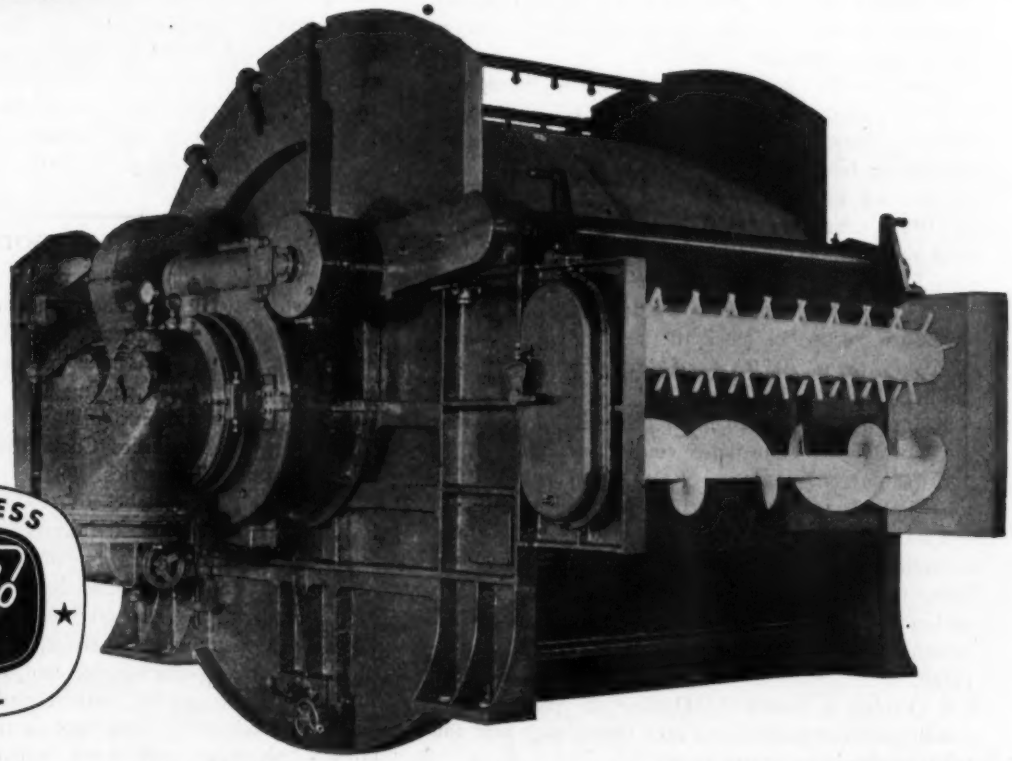


STAINLESS ARMCO STEEL

THE AMERICAN ROLLING MILL COMPANY

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger, Editor

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Chicago Professional Paper Group—Third Monday of each month except July and August at Chicago Bar Association, Chicago, Ill.

FIBROUS MATERIALS SHORTAGE

Collections of waste fibrous materials continue to reflect the shortage of labor in all departments of the waste materials industry, particularly in the salvage of waste paper. The all-over requirements for all types of paper and paper board continue extremely heavy and the supply situation in board materials is reported acute. Paper board mills as a whole report a low inventory position. Some mills are fairly well supplied but others are running on a hand-to-mouth basis, with stocks adequate, in some cases, to one or two days' operations. The acute supply situation appears most pronounced in the deteriorating supply in the lower and bulky grades of waste paper, such as news and mixed paper. The current relative good supply of old corrugated boxes is the one favorable aspect in the critical paper stock supply situation.

Receipts of waste paper for the first eight months in 1944, reported by the Department of Commerce, were 5,640,000 tons. As this tonnage includes some conversion broke, it is not strictly comparable with the total of 4,712,000 tons for the first eight months of 1943, which does not include this item. Mill consumption of waste paper aggregated 5,580,000 tons in the first eight months of 1944. For the like period in 1943, mills consumed 4,959,000 tons. Mill inventories of paper stock in the first eight months of 1944 rose to 793,000 tons, from 550,000 tons in the like period in 1943.

From the latest available reports it appears that the shortage of waste paper continues. The goal set for the current year is 8,000,000 tons or 667,000 tons monthly. Receipts at the end of August were 641,000 tons short of the goal, which is more than collections are averaging monthly, the quantity now being under 600,000 tons monthly. Receipts of the nation-wide campaign which ended the first of last month and known as the Boy Scouts Salvage Campaign, is expected to increase the collection ratio. On October 1, nearly 1,000,000 Girl Scouts began a collection campaign to salvage paper, rags and tin, with emphasis on waste paper.

The WPB Conservation and Salvage Division, states the Department, in cooperation with the Periodical Publishers National Committee, is sponsoring "paper holidays" in cities and towns throughout the country in an effort to stretch limited supplies of paper. During these holidays, retail merchants will use no bags or wrapping paper, except for articles that require wrapping for sanitary and protective purposes. Because some dealers still have stocks of packaging materials on hand, the public has not yet felt the pinch of shortages. With the ever increasing paper needs for the armed services and essential home products, still further cuts in civilian supplies may be anticipated in the future.

The current supply situation in rags is somewhat better than in paper stock. Receipts for the first eight months of 1944 totaled 302,000 tons, compared with 269,000 tons in the like period in 1943, an increase of 12.2%. Consumption of rags, all grades, totaled 284,000 tons in the first eight months of 1944, compared with 265,000 tons in the like period in 1943, which was an increase of 7.2%. Inventories of rags for the first eight months of 1944 increased from 69,000 tons in 1943, to 86,000 tons in 1944, which is a gain of 24.6%. More substitutes have been pressed into service as the standard waste fibrous materials have become less available. This is reflected in the increasing receipts, consumption and rising inventories of "other" fibrous materials, such as bagasse. Receipts of other fibrous materials in the first eight months of 1944 totaled 643,000 tons, compared with 419,000 tons in the like period in 1943, and increase of 53.4%. Consumption of other fibrous materials totaled 666,000 tons in the eight months of 1944, compared with 470,000 tons in the same period in 1943, an increase of 41.7%. Total inventories of other fibrous materials for the eight months of 1944 were 396,000 tons, compared with 139,000 tons in the same period in 1943, an increase of 184.9%.

WMC STARTS PULPWOOD DRIVE

An intensive manpower recruiting campaign for the pulpwood industry has been launched by the War Manpower Commission through 1,000 U. S. Employment Service offices in as many pulpwood producing areas. It is directed at getting men into the woods to cut pulpwood and into mill yards to unload it, reports the War Activities Committee of the Pulpwood Consuming Industries.

A campaign plan, labelled "1944-45 Manpower Program for the Pulpwood Industry," has been furnished the USES offices by the War Manpower Commission. Copies also have been sent to all pulpwood mills by the War Activities Committee of the Pulpwood Consuming Industries, which cooperated with WMC in working out the campaign program.

"The war is causing unforeseen demands for pulpwood products," a foreword in the program kit states. "Shipping containers, nitrated pulp for

plastics, rayon and smokeless powder, sanitary papers and building papers are needed now and needed badly.

"Even the small percentage of our pulpwood production which goes into newspapers and magazines is important to the war effort because it keeps the American people the best informed people in the world." S

The WMC-USES campaign has four objectives:

1. To transfer farm workers during agricultural off-seasons to pulpwood cutting operations.

2. To return former woods workers who have shifted to less important industries to pulpwood cutting.

3. To recruit new manpower wherever available for both pulpwood cutting and work in pulpwood consuming mills where needed.

4. To combat absenteeism, labor turnover, and the "short week" in the pulpwood industry wherever it is hampering production.

The program plan suggests the organization of a Pulpwood Manpower Committee in every pulpwood producing community where pulpwood cutters and mill yard workers are badly needed. Local newspapers are to be represented on this committee, and where a local Victory Pulpwood Committee is active the job of recruiting workers may be combined with that of implementing pulpwood production.

The WMC points out that the pulp and paper industry stands sixth in American manufacturing. In 1939 its output was valued at more than two billion dollars. It employed about 316,000 persons and its payroll amounted to $435,000,000.

The program guide also reminds USES offices that pulpwood cutting is so important to the war effort that the War Production Board placed it on its Production Urgency List last May.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1944		Corresponding Weeks—1943	
Sept. 30	95.2	Oct. 2	91.7
Oct. 7	94.8	Oct. 9	90.9
Oct. 14	94.7	Oct. 16	90.2
Oct. 21	91.6	Oct. 23	88.8
Oct. 28	92.7	Oct. 30	88.5
Nov. 4	*94.1*	Nov. 6	89.9

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1943	87.2	88.9	89.5	88.7	91.4	84.8	84.3	91.0	88.3	89.6	89.6	82.0	87.8
1944	89.6	89.6	89.2	88.8	89.7	90.7	81.1	92.5	90.1	*93.6*			

COMPARATIVE YEARLY SUMMARIES

	1937	1938	1939	1940	1941	1942	1943	1944
Year to Date	84.2	70.9	81.6	86.1	96.4	91.9	88.3	*90.1*
Year Average	79.8	71.5	83.4	85.6	97.4	90.4	87.8	

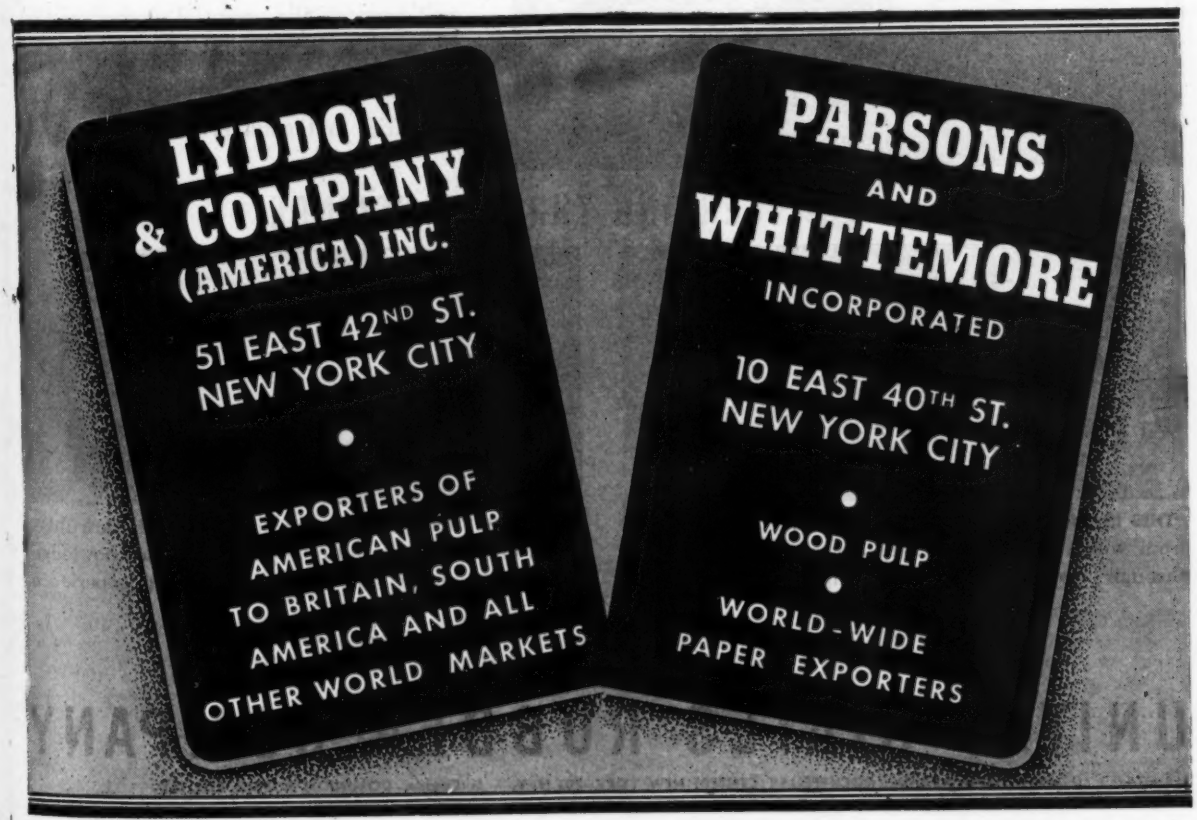
*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1938	56	63	63	60	60	59	59	69	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	83	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	76	81	82	77	84
1943	86	88	94	94	96	94	89	96	94	94	93	87	93
1944	90	96	95	96	96	96	85	96	92	95			

Week ending Sept. 30, 1944—95
Week ending Oct. 7, 1944—96
Week ending Oct. 14, 1944—96
Week ending Oct. 21, 1944—94
Week ending Oct. 28, 1944—95
Week ending Nov. 4, 1944—96

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.



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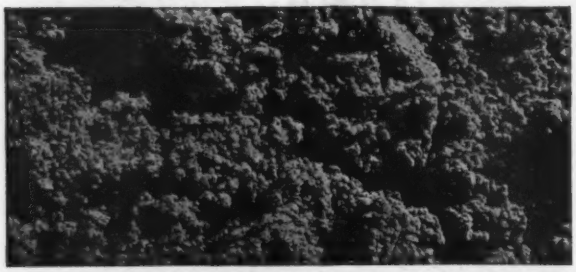

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Automatic Digester Control for Alkaline Pulp Cooking*

By H. O. Ehrisman[1]

Abstract

In operating a pulp digester, the important variables all relate closely to temperature, viz.: rate of temperature rise, temperature of cooking, time of cooking, uniformity of temperature, and amount of relief. A modern automatic digester control system operates to control these variables. It benefits yield, production, quality, and uniformity of the pulp, as well as the steam, chemical and labor requirements. This paper is intended to describe briefly the digester operating variables, and the instruments required for their control.

Whether it concerns the processing of pulp, synthetic rubber, high test gasoline, penicillin, or blood plasma, operating variables are always found to be the bottle-neck which limit results. As long as variables exist, there are opportunities where, through closer control, further inprovement is possible. The degree to which these variables can be controlled largely determines product uniformity, quality, yield, and labor requirements. These things are particularly true in pulp cooking, because digesters produce such tremendous tonnage that even small improvements can pay handsome dividends.

Cooking Schedule

The combination of rate of temperature rise, temperature of cooking, and time of cooking determine the cooking schedule. This combination is very important, for it determines what grade of pulp will be produced, at what rate of production, and at what manufacturing cost.

During the temperature rise, very little actual cooking occurs, but it is then that the wood chips should become thoroughly soaked with cooking liquor. If the rate of rise is too fast, soaking is incomplete and the chips cook unevenly. If too slow, production time is wasted. The rate of temperature rise also may have an important effect on the uniformity of circulation developed by the convection currents in the digester.

As the cooking temperature is approached, the chemical reaction increases at a rapid rate. Excessive temperature will cause the cellulose to break down chemically and physically. In this region the speed of lignin removal is said to be doubled for a temperature rise of 18°F. One authority (1) gives the following figures based on the same digester charge for both cooks:

	At 320° F	At 350° F.	Difference
Fiber yield from wood cooked, %	48.0	44.6	3.4
Alkali consumption, %	54.0	72.3	18.3

Such facts as these emphasize that consistently uniform pulp of the desired quality cannot be expected, unless the time-temperature schedule is carefully determined, and then accurately repeated on every cook. No operator, however conscientious, can control manually to the necessary accuracy. This is a proper job for an *automatic* controller for it can be continuously and minutely attentive, maintaining the desired temperature conditions exactly, without tiring, without forgetting, without being called away. A cam-set automatic controller can be depended upon to repeat a cycle exactly, again and again, without variation.

Temperature Uniformity

In most of the thinking in the past a single point temperature measurement has been considered as reasonably representative of the entire digester charge. Just how reliable this assumption is, and what it means, is worthy of a little consideration.

It is the combination of heat and liquor that cook the wood. To cook uniformly all of the liquor must be kept at a uniform temperature throughout the great mass in the digester. It is known how difficult it is to heat an ordinary kettle of water so that its temperature is absolutely uniform at every point. Hence anything as mammoth as a pulp digester, packed with chips and liquor, obviously presents quite a problem.

Figure 1 shows the results of a multipoint temperature exploration test which was made on a direct-steamed digester, cooking sulphite pulp. This, of course, was a slow cook, but it illustrates the point very well. These data were taken with two 6-point recording resistance thermometers, from three equally spaced bulbs at four different levels in the digester.

It was found that the three separate temperature readings on each level differed so little that only their averages were plotted, hence only four curves are shown; one for each of the four levels. The test was repeated on 202 consecutive cooks and the temperature curves always showed the same general pattern, i.e., progressively higher temperatures

* Presented at the TAPPI Meeting in Savannah, Ga., Oct. 18-20, 1944.

[1] Member TAPPI; Manager Pulp and Paper Division, The Foxboro Co., Foxboro, Mass.

towards the top of the digester. That is due to the natural circulation of heat up through the center of the digester to the top, where it mushrooms out and follows down along the wall to the bottom.

All tests showed considerable differences in temperature between levels. Figure 1 shows as much as 68°F. The figures given above on pulp yield and chemical consumption have only to be considered to see what it means if different zones in the digester operate at different temperatures. Many digesters may not have as much temperature difference as is shown to exist in this one, but some may have even more. However, any cooking temperature differences will affect results, and tests like this one indicate that these differences are probably greater than is generally recognized.

From this test it can be concluded that a single-point temperature measurement may be very misleading, and result in false and costly conclusions. Obviously more than one point of temperature measurement is required to guide the cooking operation. But it is not necessary to measure the temperature in every part of the digester, for the pattern which the zones of temperature follow is known. Therefore, a measurement showing the extremes of temperature difference is about all the information for which there is any practical operating need.

If a recording instrument is installed for this purpose it will show how good a job is being done on every cook, and the extent to which inadequate circulation is affecting pulp uniformity, yield, and chemical consumption. The chart record will eliminate guess work and will guide the operator in maintaining optimum circulation on every cook. It will aid the engineers and supervisors when they arrange steam nozzles, forced circulation equipment, and other devices to promote circulation. It will serve as a positive check on whether these things continue to operate at their maximum efficiency. A two-point temperature measurement from bulbs located in the top and bottom zones of the digester, where they show the extremes of temperature difference, is therefore strongly recommended, and is certain to result in better digester operation.

Digester Relief

A wood chip is a combination of wood substance and air space. When chips are immersed in cooking liquor, the air is slowly liberated during the heating, swelling, and breakdown of the chips. When liberated, the air forms countless tiny bubbles, which in rising through the liquor merge into larger and larger bubbles. Their climb may be very slow, due to the resistance of the chips, and since an air bubble displaces only the liquor, the chips within the bubble

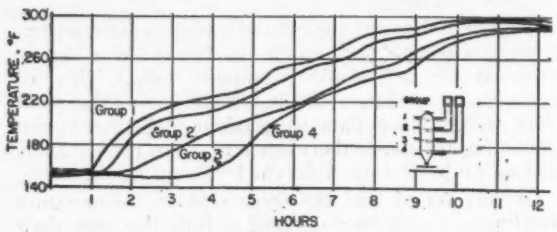

FIG. 1

The Curves in Fig. 1 Show Results of a Temperature Exploration Test on Sulphite Pulp Cooking in a Direct Steamed Digester. Each of the Curves Represents the Average Temperature of Three Resistance Thermometer Bulbs Equally Spaced in One of Four Different Horizontal Planes in the Digester.

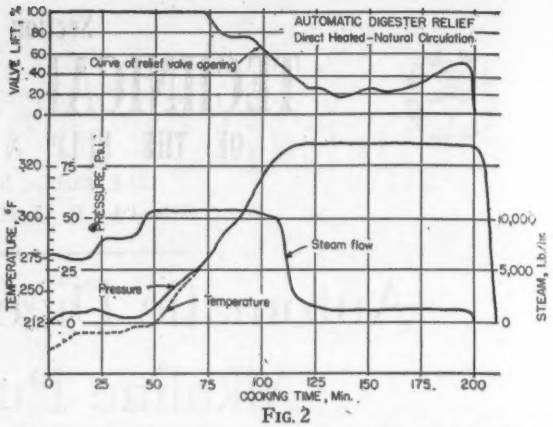

FIG. 2

The Curves in Fig. 2 Were Taken from a Direct Steamed Digester During the Cooking Cycle of Alkaline Pulp from Spruce, Jack Pine, and Fir. The Upper Curve Shows Relief Valve Opening. The Lower Curve Shows the Corresponding Temperature-Pressure Relation in the Top of the Digester, with the Digester Relief under Automatic Control.

boundary are left dry, causing localized cooking interruptions.

When the bubble reaches the vapor space in the top of the digester, it mixes with the steam there, adding its own partial or excess pressure. Hence any gas that may be present is easily measured and controlled by comparing the pressure and temperature of the vapor. If the pressure for the existing temperature exceeds that of pure water vapor, as determined from the saturated steam tables, then the excess is due to gas.

The control of digester top relief is important for two reasons. First, a large amount of gas is liberated continuously throughout the cooking cycle, and if not properly relieved, natural circulation in the digester is disturbed and the pulp will seriously lack uniformity. Second, air readily gives up its oxygen to the pulp, so unless it is relieved as quickly as possible, the color of the pulp may be affected by oxidation.

In order to accurately determine excess pressure, the measuring elements for vapor temperature and pressure must be located in a zone of 100% vapor. The cooking liquor may at times actually be hotter or colder than the vapor, so if it comes in contact with the temperature bulb, the accuracy of the vapor temperature measurement may be destroyed. It has been found that best results are obtained if the relief gases are measured as they pass out the relief line, using a condensing chamber at the measuring elements. Even then, although mills cooking northern wood never seem to experience it, some mills cooking southern wood have trouble making this measurement because of excessive liquor pull-over. In such cases it is necessary, either to reduce digester loading, so excessive amounts of liquor will not be carried out with the relief, or to use some type of liquor separator in the relief line ahead of the point of measurement.

Some interesting tests have been made which show the rate of relief with the digester under automatic control. Figure 2 shows test results at a Canadian mill cooking spruce, jack pine, and fir. The lower set of curves shows gas space temperature and pressure, plotted against time. The upper curve shows percent of relief valve lift (on a wide-range V-port valve) also plotted against time. At the start of the cook it can be seen from their wide separation that temperature and pressure are not related, and that

the relief valve is wide open. As the cook progresses temperature and pressure are gradually brought together, and the controller throttles the relief valve as required to maintain the desired relationship throughout the balance of the cook.

Figure 3 is a similar curve taken on a cook of Southern pine. Note that the relief valve opening gradually closes off as the cook progresses, except in the region of 60 pounds digester pressure. Here, quite suddenly it opens up again, and for some minutes. Apparently this is due to the quantity of turpentine in the relief gases at that time. On the same digester, a cook of gum wood showed a similar curve except there was no turpentine peak. Bear in mind while looking at the relief curves, that a wide-range V-port valve has a rapidly decreasing effective area as it closes. At 50% of lift these valves are about 13% open, and at 25% of lift they are less than 5% open.

Automatic Digester Control System

Based on our experience with alkaline pulp cooking, the Foxboro digester control system shown in Fig. 4 has been developed for slow cooks requiring a cam-set controlled rate of temperature rise. The instrument at the top is a temperature recorder. It records digester top and bottom zone temperatures, to check uniformity of circulation, and it also records the digester pressure. Both temperatures are recorded by one pen, pressure by the second pen. The chart is one which was especially developed for this service. It is of the segmental type, with uniform graduations for pressure, and uneven graduations for the temperatures which correspond for pure steam. This makes it possible to read excess pressure directly from the chart, without reference to the steam tables.

This is an electronic type resistance bulb instrument of very high accuracy. It is a distinctly new design, so a little additional description is in order. It has an exceptionally fast, dynamic response, combined with a sensitivity to changes in temperature as small as 0.1% of scale range, so it is particularly well suited for recording temperatures from two or more points in the digester. Also it can be used to record an average temperature from several bulbs.

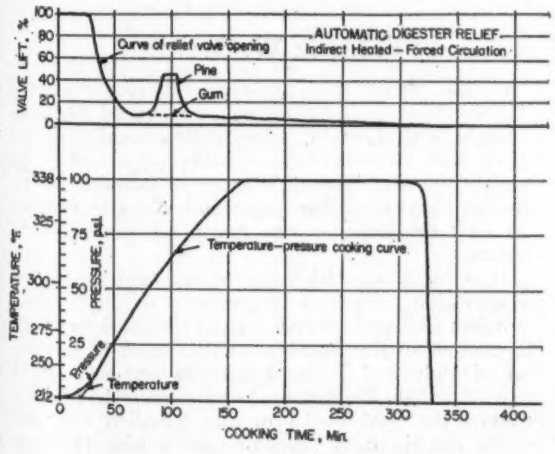

FIG. 3

The Curves in Fig. 3 were Taken from a Direct Steamed Digester During the Cooking Cycle of Alkaline Pulp from Southern Pine. The Upper Curve Shows Relief Valve Opening. The Lower Curve Shows the Corresponding Temperature-Pressure Relation in the Top of the Digester, with the Digester Relief under Automatic Control. Note the Turpentine Peak when Cooking Southern Pine.

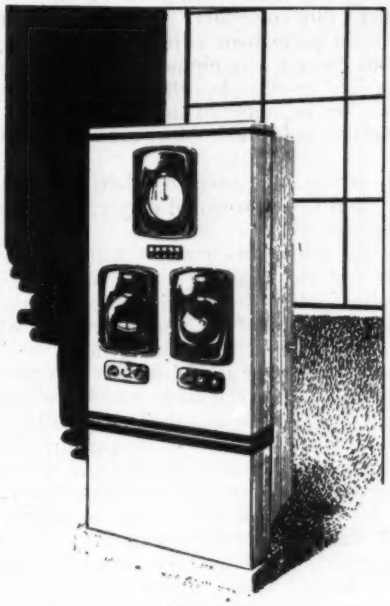

FIG. 4

An Automatic Digester Control Unit for Slow Cooks Requiring a Controlled Rate of Temperature Rise.

Figure 5 shows the simplicity of the instrument operating mechanism. Unlike earlier self-balancing bridge circuit instruments, this one utilizes an alternating current bridge with a variable capacitor, like a radio condenser, for balancing. It has a reciprocating solenoid motor acting directly on the capacitor and recording pen. It has no galvanometer and feeler mechanism, nor rotating balancing motor with gear train. It has no slidewire with its troublesome sliding contact. There are only five moving parts, and no places requiring lubrication or adjustment.

Referring again to Fig. 4, the instrument at the right is a cooking schedule controller. This can operate from either a pressure or temperature measurement because vapor pressure and temperature in the top of a digester are always definitely related. Pressure is perhaps the better of the two, inasmuch as temperature is a spot measurement, whereas pressure is much more indicative of over-all conditions. This instrument is a cam-set controller. The control-point setting lever has a roller which rides on the edge of a cam, which is rotated by a Telechron electric drive. Thus the instrument control point is set automatically according to the time schedule cut on the cam.

The plate below the recorder carries push buttons and pilot lights. The first two pilots indicate whether the electric power supply is turned on, and whether the cam drive motor is running. The buttons are for turning these on or off. The other pilots identify which of the thermometer bulbs is connected to the temperature recording pen at any instant. In normal operation, an automatic selector switch connects each bulb to the pen alternately. By means of the push buttons the selector switch can be disconnected at any time, to take a momentary reading from either of the bulbs.

The instrument at the left is a digester relief controller. Its action is governed by a measurement of the temperature-pressure relation of the relief gases. The actual pressure and temperature have no

effect; only the differential between these readings will actuate this controller. The control point, once set is left in permanent adjustment. The setting is selected to control a minimum differential or excess pressure. The smaller the differential, the more steam will have to be relieved to maintain it, because steam and the undesirable gases are always intimately mixed.

But it is not necessary to relieve to zero excess pressure, and to do so would only cause an unnecessary waste of steam.

Below the controllers are two remote valve operators, one for the steaming valve, the other for the relief valve. They are provided for manual valve operation independent of the controller whenever desired, for experiment or emergency.

Figure 6 is another model of this digester control system developed for fast cooks which are brought up to cooking temperature as quickly as possible, without benefit of a controlled rate of temperature rise. The cam features are, therefore, omitted and the controller functions only at the set cooking temperature.

Each of these control systems is supplied as a complete unit, with the instruments mounted in a neatly arranged cabinet-type protective panel. At the back, hinged doors provide convenient access to the instrument connections and storage space for charts and ink. The instruments are mounted, completely wired and piped, so that only outside connections to air supply, power, and wide range V-port valves are necessary to put the unit into operation. The cabinet is finished in "battleship gray" enamel which with the black instruments and red trim give a pleasing modern appearance. Appearance has its practical value, too, for it is known that equipment which is good looking, as well as useful, stimulates the pride of operators, and promotes care, both in use and maintenance.

But even so, it is not the color of the enamel that is important, nor the shape or appearance of the instruments. The thing that really matters is, "What

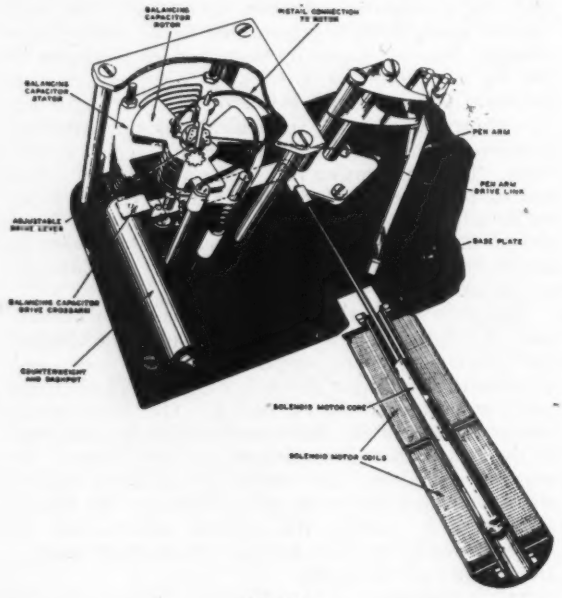

FIG. 5

The Operating Mechanism of the Foxboro Dynalog Temperature Recorder. This is a Distinctly New, Electronic Type, Resistance Thermometer

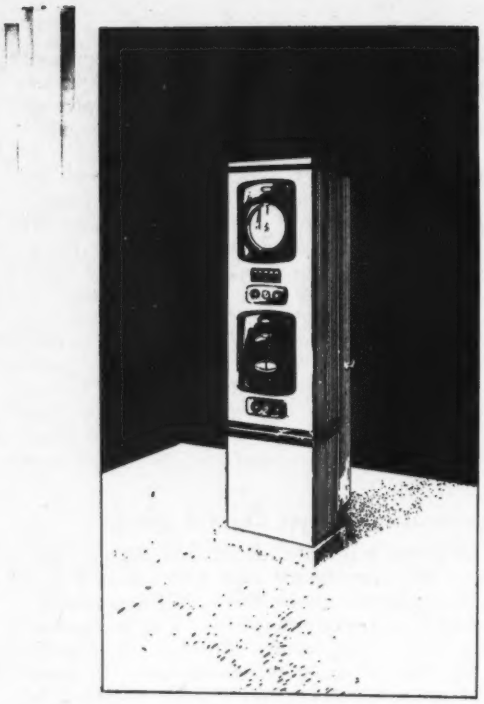

FIG. 6

An Automatic Digester Control Unit for Fast Cooks.

can they do?" Will an automatic digester control system produce savings and contribute to the profitable operation of the mill? Will it help relieve the problems due to labor shortages? Will it increase mill efficiency, and production? Will it assure uniform pulp of standard grade? These are the questions mill men ask when they consider the recommendations of an instrument engineer. It must be that the answers they receive are satisfying and convincing, for the trend is definitely toward automatic cooking control, in pulp mills throughout the United States and Canada.

Literature Cited

1. The Manufacture of Pulp and Paper, Vol. 3, Sect. 5, p. 54.

Frederik W. Grewin

A cable from Mr. Lundquist, Director of the Swedish Paper Mill Association, announced the death of Frederik W. Grewin, technical director of Holmens Bruks and Fabriks A/B, Norkoping, Sweden on October 28. Mr. Grewin's name is familiar in the American and Canadian paper industries in connection with the Ross-Grewin controlled air in drying systems.

Mr. Grewin was 64 years of age and died after an operation. He was a graduate of the Malmo Technical College in Sweden as an electrical engineer. He was one of the founders of the Swedish Association of Pulp and Paper Engineers and was active in the Swedish Employers Association. He recently received the gold medal of the Swedish Patriotic Society for his many years of service with Holmens Bruks.

He represented his company in the Technical Association of the Pulp and Paper Industry. Mr. Grewin is survived by his wife and son.

The Alumina Content of Rosin-Free Handsheets in Relation to Tub Sizing*

By B. W. Rowland[1] and James J. Harrison[2]

Abstract

The addition to a pulp suspension of alumina in the form of aluminum sulphate or of aluminum oxide sol brings about two very different types of results. Certain colloidal aluminum oxide sols, when adsorbed by the fibers, give paper a very good resistance to water penetration, as well as some resistance to oil and ink penetration. If these sols contain even slight amounts of sulphate ion, they have no effect on the water resistance of the sheet. Sheets treated with alum to pH 5.5 show no water resistance.

The addition of alum to paper caused very definite decreases in the strength of paper. The addition of the same amount of alumina, as aluminum oxide sol, produced handsheets with properties as good or slightly better than those of sheets without any aluminum oxide present. Thus, it appears that the electrolyte constituents of aluminum sulphate have a marked deleterious effect on the strength properties of paper.

As the amount of alumina sol addition is increased, the water resistance of the paper increases. In tub sizing with starch, the results indicated that the more alumina sol added to the stock, the higher the water resistance and the smaller the starch effect. All the sheets, regardless of the amount of alumina present, were brought to approximately the same strength in the tub, but the strength increment showed a much greater rise with sheets in which the alumina content was low.

The tub sizing experiments of sheets treated with various amounts of alum is independent of any size resistance of the paper, as they were all water-leaf sheets. The sheets upon tub sizing with starch were all brought up to approximately the same strength, regardless of the initial strength. Thus, the sheets with large amounts of alum showed larger strength increases in tub sizing than those with a high initial strength and small amounts of alum.

Because of the complex nature of the reactions involved in the rosin sizing of paper, many theories have been proposed as to the effect of alumina in the system. In recent years very complete reviews on the subject of sizing have been published by Olsen (*1*), Klein (*2*), and Sutermeister (*3*).

Schwalbe (*4*) advanced the theory that the ink fastness of rosin sized paper is produced by the precipitation of mixtures of aluminum hydroxide and free rosin. Heuser (*5*) stated that colloidal cellulose attracts the colloidal aluminum hydroxide, leaving cellulose positively charged. The fibers then adsorb the negatively charged rosin sol and become sized.

Ostwald and Lorenz (*6*) carried on extensive studies concerning the effect of the various components of a size. They pointed out that the positively charged alumina is adsorbed by the negatively charged cellulose, and that alumina may also form a positive layer around the electronegative rosin particles. It was thus thought possible that the colloidal alumina may act as an electrostatic binding material between fiber and rosin.

Kanamaru (*7, 8*) investigated the effects of adding various electrolytes at different concentrations on the zeta-potential of cellulose. He showed that the zeta-potential could be reduced to zero with aluminum sulphate and aluminum hydroxide.

The effect of alumina alone on the sheet properties when added in the absence of rosin, fillers, and other constituents has received little mention in the literature. Griffin (*9*) reported that no sizing was obtained when alum or freshly precipitated aluminum hydroxide was added to handsheets in the absence of rosin. Schwalbe and Robsahm (*10*) found that only alumina and no sulphate was adsorbed by cellulose fibers. Ellern-Eichmann (*11*) concluded from his experiments that the loss in tensile strength was a function of alumina adsorbed and that the loss was appreciable only when the amount of alumina is 2.5% or more on the weight of the paper. Recently, Keller, Simmonds, and Baird (*12*) showed that an increase in mineral content caused a decrease in strength properties, other than tearing strength of paper.

Ostwald and Lorenz (*6*), in their studies of rosin sizing, observed that an aluminum oxide sol prepared by Crum's method (aluminum acetate hydrolysis) imparts a sizing or tanning to a sheet of filter paper. The charge on the cellulose fibers was found to be reversed by treatment with the aluminum oxide sol.

Collins, Davis, and Rowland (*13*) have discussed the relation of alumina to the papermaking system. Weiser (*14*) published an excellent review of investigations in which attempts were made to determine whether alumina is a hydrated aluminum hydroxide ($Al(OH)_3 \cdot xH_2O$) or a hydrated oxide ($Al_2O_3 \cdot xH_2O$); he also presented a resumé of methods of preparing sols.

Materials and Equipment

The pulp used was a quick-cook bleached sulphite obtained in a wet-lap form.

The starch used in the tub-sizing operation was a commercial tub-sizing starch of high quality. The 5% starch size was prepared by making a thin paste in cold water, heating to 90°C. with stirring in a water bath and cooking for 15 minutes at this temperature. The starch solution was cooled to 48.9°C. and applied to the paper.

All the mechanical treatment of pulp was carried out with the British disintegrator as described in TAPPI Standard T 205 m-40.

Freeness was measured with the self-lifting Schopper-Riegler tester.

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A portion of a thesis submitted by the junior author in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Master of Science from Lawrence College, Appleton, Wis., June, 1941.

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After soaking overnight in 1 liter of water the wet-lap pulp (90 grams air-dry) was charged into the British disintegrator and the total volume of water was brought up to 2 liters and beaten for 1 hour. The freeness of the pulp was determined after the pulp had been treated with aluminum oxide.

The handsheets were made on the Noble and Wood sheetmaking machine. The pulp suspension, after beating and treatment in the desired manner, was made up to a volume of 28 liters or approximately 0.32% consistency.

Handsheets weighing 2.505 grams (moisture-free) were made up by the following procedure, which was standard throughout the experiments. The stock was added to the deckle box and diluted with softened water to the mark provided; it was stirred rapidly five times with the hand stirrer and then once slowly. The pulp suspension was then drained on the wire and the wet sheet and wire were removed.

Before pressing, the sheet was covered with two blotters and placed between the press felt. The press felt was previously well wetted, wrung out by hand, and run through the press at least five times. A constant weight was used on the press throughout the handsheet making. The sheet, wire, and blotters were run through the press twice, the sheet was removed from the wire, and placed between the blotters for drying.

The dryer was set at a suitable temperature (approximately 105°C.) and this temperature and the speed of rotation were maintained constant through the work. The sheets were conditioned overnight at 65% relative humidity and 70°F. before testing.

The sheets were tested for the various strength properties by the following methods:

Test	TAPPI Method
Basis weight	T 410 m-36
Thickness	T 411 m-36
Tensile strength	T 404 m-36
Bursting strength	T 403 m-36
Folding strength	T 423 m-36
Porosity	(apparatus 2) Gurley

Water Resistance

The recently developed fluorescence size tester was used *(15)*. The size time which is measured with this instrument is the time necessary for liquid water to transude a sheet. The Uranine B indicator used is not influenced appreciably by water vapor and for this reason the trouble encountered with water vapor permeability in other dry indicator size tests is avoided.

Oil Resistance

The apparatus used was the Fuess oil pentration tester. The length of time it takes for a drop of oil to come through a sheet and give a uniformly dark appearance was measured visually.

Aluminum Oxide Determination in sols

An aliquot portion of sol was made distinctly alkaline with ammonium hydroxide, evaporated to dryness, and ignited in a muffle furnace to constant weight; the residue was weighed as aluminum oxide.

Chloride Determination

The amount of chloride ion present in the sols peptized by hydrochloric acid or aluminum chloride has a very important effect on the nature of the sol and on its behavior toward the cellulose fibers. The amount of chloride present was determined by a modified Volhard method as described by Kolthoff and Sandell *(16)*.

Determination of Alumina Adsorbed on Fibers

The amount of alumina which is adsorbed by the fibers treated with alumina was determined from the difference in ash content of an untreated and a treated pulp sample or handsheet.

Tub Sizing of Sheets

The method consists in passing a continuous sheet through a temperature controlled sizing bath at constant speed and removing the excess size between a pair of rubber press rolls with adjustable pressure at the nip. The speed of the tub sizing can be regulated by changing the belt ratio of the pulley from the constant speed motor which drives the lower press roll.

The effects which the tub-sizing material caused were evaluated by physical strength tests. The reason for this is that, at the present time, there is no reliable method known for the quantitative determination of starch in paper. Furthermore, the actual quantities of starch in the paper would be of little value in a study of this nature because a chemical analysis would not show the distribution of starch. Therefore, it seemed best to evaluate the effect of the tub sizing by the actual changes in physical strength which occurred on treatment with the tub-sizing materials, even though such changes are only relative.

The Influence of Aluminum Oxide Sol Additions on Hand Sheet Properties

Preliminary investigations were made on aluminum oxide sols prepared by various methods to determine their effect on the size resistance of paper. Ostwald *(6)* mentioned in his work that a mineral sizing was obtained upon treating a sheet of filter paper with an aluminum oxide sol made by hydrolysis of aluminum acetate and that this mineral sizing increased the resistance towards ink. The sols used in the first experiments were prepared from amalgamated aluminum, aluminum sulphate, or aluminum chloride.

It was observed in these preliminary studies that a definite resistance to water penetration was produced by treating paper with aluminum oxide sols made up from aluminum chloride using the common methods of preparation. It also appeared that, when the sheet was dried at 100° to 105° C. (a commonly used temperature for drying paper), the size resistance is increased. If the chloride is not removed completely before the paper is treated, it causes very rapid deterioration when the paper is heated. The sols made from amalgamated aluminum and aluminum sulphate were found to give no increase in resistance to the passage of water or ink.

The sol used in treating the pulp was made according to the following procedure: 180 grams of aluminum chloride hexahydrate were dissolved in 1500 ml. of distilled water and the resulting solution was brought to the boiling point. To this 155 ml. of 28% ammonia were added slowly with constant stirring. The solution was then stirred for 15 minutes at the boiling temperature, immediately diluted to 2500 ml., and dialyzed at 75° to 80° C, until a titration showed that not more than 45 milliequivalents of chloride per liter were present. The analysis of the sol used in the investigations showed 0.613 gram of aluminum oxide per 100 ml. of sol, 41.9 milliequivalents of chloride per liter, and a pH of 4.3.

Effect of Adding Varying Quantities of Aluminum Oxide on the Charge of the Fibers

Aluminum oxide sol calculated to give the desired

percentage of aluminum oxide was added to the beaten and diluted pulp. After the pulp was thoroughly mixed with the aluminum oxide sol, the suspension was allowed to stand for 1 hour and handsheets were made, using a zeolite-softened water.

The data presented in Table I show the testing results of two averaged runs made under the same conditions. In Fig. 1 the amount of aluminum oxide sol added is plotted against the amount of aluminum oxide retained in the paper. The size time is plotted against the percentage of aluminum oxide retained in the paper in Fig. 2. In Fig. 3 the strength data are plotted against the amount of alumina retained.

From the data of Table I and Figs. 1, 2, and 3, it is apparent that the degree of water resistance of a sheet of paper is increased by treating with aluminum oxide sols of the type used. The trend indicates that the strength properties of the handsheets increase slightly (with the exception of tear) as the amount of aluminum oxide retained in the sheet increases.

The Effect of Increasing Amounts of Aluminum Oxide on the Charge of the Fibres

For this purpose 0.05% solutions of a pure acid and a pure basic dye (Calco Acid Scarlet M00 unblended and Methylene Blue unblended, respectively)

TABLE I.—THE EFFECT OF VARIOUS AMOUNTS OF ALUMINUM OXIDE SOL ON HANDSHEET PROPERTIES

Amount of Al_2O_3 sol added, % ..	0	0.5	1.0	2.0	3.0	4.0
Ash in sheet, %	0.29	0.536	0.936	1.327	1.53	1.58
Al_2O_3 retained, %	——	0.24	0.66	1.04	1.24	1.29
Basis weight (25 by 40-500), lbs.	44.9	45.4	44.5	44.7	45.2	46.4
Caliper, mils	5.5	5.5	5.4	5.3	5.2	5.2
Bursting strength, points/100 lbs.	83.3	80.7	81.6	87.4	86.3	84
Tear factor x 100*	149.1	147.2	138.6	158	123.5	126
Folds, number of double folds ..	161	184	208	349	339	534
Tensile strength, lbs.	8.92	9.33	10.04	10.41	10.34	10.44
Porosity, sec.	9.5	12	10	10	12	12
Fuess oil pentration, sec.	15.5	18.5	16	23	32	32
Original fluorescence size time, sec.	0	3	8	23	16	15
Size time after 2 months, sec. ..	0	8.5	26	43	42	40

* Grams per sheet divided by basis weight.

were prepared with distilled water. In this experiment an attempt was made to determine the electrostatic charges on the cellulose fibers. The methods used in determining the charge were dependent on capillary flow.

In one method a drop of the dye solution was placed on a sample and the diffusion noted. On a negatively charged sheet or ordinary cellulose, the acid dye and water will diffuse out along the sheet together, whereas the basic dye will flock out and the colorless water will continue to diffuse out from the center. A positively charged sheet will show the opposite properties, in that the acid dye will flock out and the basic dye will spread with the water.

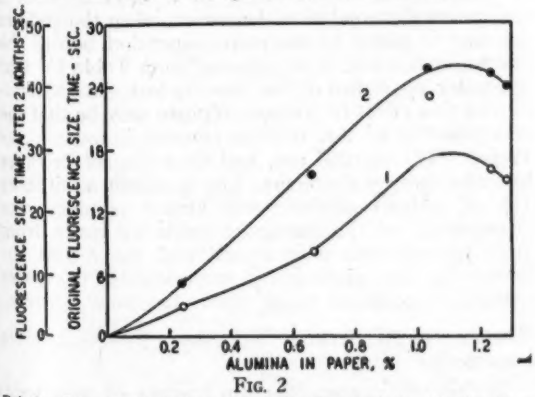

Fig. 2

Relation Between the Fluorescence Size Time and the Alumina Content of paper. 1—Original Sample. 2—After Aging Two Months

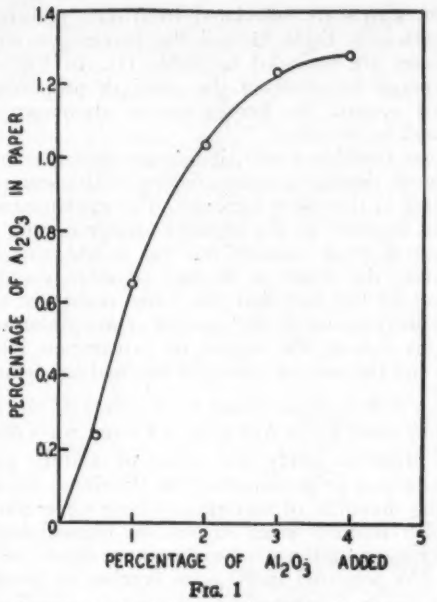

Fig. 1

Relation Between the Percentage of Alumina in the Paper and That Added to the Pulp

The other method was to suspend strips of paper in the dye solutions and note the capillary rise. The same conditions are true as in the spot method—that is, an acid dye will rise with the water and a basic dye will flock out with the negatively charged fibers. As the negativity of the fiber decreases, the water will have a tendency to rise higher than the acid dye and the basic dye will start to rise with the water.

These qualitative tests showed that the charge on the sheet became increasingly less negative as the amount of aluminum oxide retained in the sheet increased. When over 1.2% of aluminum oxide were retained in the paper, the charge was reduced to a point where it was neutral or slightly positive as shown by the dye tests.

Effect of Increasing Amounts of Aluminum Oxide Content in Relation to Tub Sizing with Starch

The sheets described above were trimmed, pasted end to end, and passed through the tub starch solution.

The tub-sized sheets were tested, with the results shown in Table II. The increments of strength caused

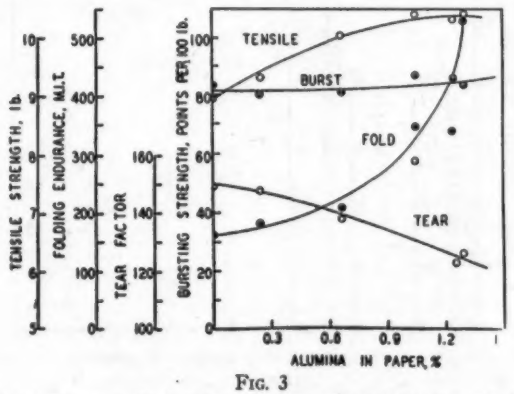

Fig. 3

Relation Between Various Strength Properties and the Percentage of Alumina in the Paper

by the starch are calculated from data presented in Table I and Table II and the percentage strength increases are recorded in Table III. In Fig. 4 the percentage increases in the strength properties are plotted against the percentage of aluminum oxide retained in the sheet.

From the above data, it appears that the strength increment decreases as the amount of aluminum oxide retained in the sheet increases. The explanation may be the decrease in the negative charge on the sheet, making it more difficult for the starch particles to penetrate the sheet, or it may be more simply explained by the fact that the water resistance of the paper increases with the amount of aluminum oxide; for this reason, the degree of penetration into the sheet and the amount of starch retained are decreased.

Effect of Adding Sodium Sulphate to Hand Sheets made with Aluminum Oxide Sol Content

In order to study the effect of adding sodium sulphate to a pulp containing an aluminum oxide sol, varying amounts of sodium sulphate were added to the fiber-alumina-water suspension immediately following the addition of the aluminum oxide sol. The pulp was prepared in 90-gram batches as usual and

TABLE II.—THE EFFECT OF INCREASING AMOUNTS OF ALUMINUM OXIDE SOL IN HANDSHEETS UPON TUB SIZING WITH STARCH

Amount of Al_2O_3 sol added, %	0	0.5	1.0	2.0	3.0	4.0
Ash in sheets, %	0.29	0.536	0.936	1.327	1.53	1.58
Al_2O_3 retained, %	——	0.24	0.66	1.04	1.24	1.29
Basis weight, (25 by 40-500) lbs.	48.8	48.9	48.0	47.5	48.2	49.3
Caliper, mils	5.5	5.5	5.4	5.3	5.2	5.2
Bursting strength, points/100 lbs.	116.5	120.1	119.9	116.4	114.1	108
Tear factor x 100*	95.0	106.7	104.3	131.7	124.5	106.3
Fold, no. of double folds	1086	1644	1498	808	961	847
Tensile, lbs.	13.75	13.85	13.9	13.3	13.45	12.9
Fluorescence size time, sec.	33	56	53	51	54	58

* Grams per sheet divided by basis weight.

TABLE III.—THE PERCENTAGE INCREASE IN STRENGTH PROPERTIES OF HANDSHEETS WITH VARIOUS AMOUNTS OF ALUMINUM OXIDE UPON TUB SIZING WITH STARCH

Amount of Al_2O_3 sol added, %*	0	0.5	1.0	2.0	3.0	4.0
Ash in sheet, %*	0.29	0.536	0.936	1.237	1.53	1.58
Ash retained, %*	——	0.24	0.66	1.04	1.24	1.29
Bursting strength, % increase	39.9	48.7	47.1	33.2	32.2	28.5
Tear factor, % decrease	36.1	27.4	24.7	16.5	13.1	15.9
Fold, % increase	564	800	603	139	179	58.6
Tensile, % increase	54	48.4	38.8	28.1	26.8	23.6
Original size time*	0	3	8	23	16	15
Size time after 2 months standing,* sec.	0	9	26	43	42	40

* Taken from Table I.

diluted to 5 liters. Three per cent of the aluminum oxide sol were added to the pulp suspension in the usual manner, followed by the addition of the desired percentage of sodium sulphate. Handsheets were made up in the customary manner, and strength tests were made.

Handsheets were trimmed, cut, and made into a roll for tub sizing. These sheets were tub sized on the miniature tub-sizing machine. The data obtained from the tests are shown in Table IV.

The sizing effect of treating an alumina-content sheet with sodium sulphate after forming, rather than before, was studied. Handsheets were made by adding 3% aluminum oxide sol and no sodium sulphate. Half of these sheets were soaked for 10 minutes in tap water and half were soaked in a 2% sodium sulphate solution. Half of the sheets treated in each solution were air dried and the remainder were dried on a Williams pulp drier at 100° C. The water resistance was then measured, using the fluorescence size tester. The results obtained are as follows:

Sample	Fluorescence Size (sec.)
Original handsheet	17
Water treated—air dried	14
Water treated—heat dried	13
2% Na_2SO_4 treated—air dried	16.5
2% Na_2SO_4 treated—heat dried	14

TABLE IV.—THE EFFECT OF ADDING SODIUM SULPHATE TO HANDSHEETS MADE WITH 3% ALUMINUM OXIDE

Na_2SO_4 added, %	0	1	2	3	0
Ash in paper, %	1.936	2.095	2.115	2.17	0.293
Al_2O_3 retained, %	1.643	1.80	1.82	1.88	0.0
Bursting strength* points/100 lbs.	97	92	95.2	96.2	91.6
Bursting strength after tub sizing	115	123	124	122	123
Bursting strength % increase	18	33.7	30.5	27	34.3
Tear factor x 100**	102	107	105	105	116.5
Tear factor x 100 after tub sizing	93.8	90.3	88.6	88.5	85.5
Tear factor % decrease	8.0	15.6	12.7	15.7	26.6
Fold, number of double folds*	521	528	564	446	428
Fold after tub sizing	1957	1497	1931	2141	1596
Fold, % increase	276	184	243	380	273
Tensile, lb.*	11.92	11.69	11.99	11.5	9.73
Tensile, lb. after tub sizing	15.87	16.6	16.65	15.58	15.45
Tensile, % increase	33.1	42	38.8	39.8	58.8
Porosity, sec.*	38	45	52	42	39
Fluorescence size* time, sec.	17	1.0	0	0	0
Fluorescence size time—tub sized, sec.	66	65	67	67	27

* Physical tests on which it is not stated whether tub-sized or not are the tests run before tub sizing.
** Grams per sheet divided by basis weight.

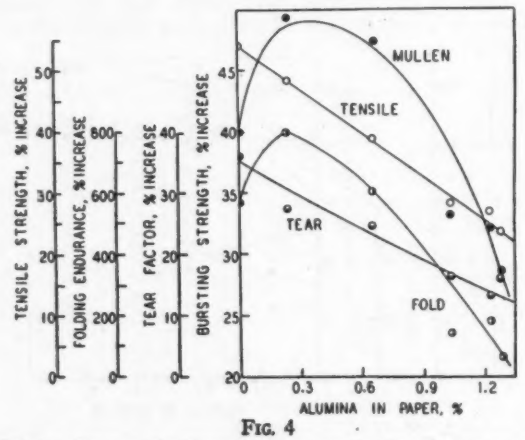

FIG. 4

Relation Between the Percentage Increase in Strength Properties Upon Tub Sizing and the Percentage of Alumina in the Paper

These data show that there is very little loss in sizing on treating handsheets containing aluminum oxide with sodium sulphate. Water appears to have as much effect on the sizing of a sheet as does a sodium sulphate solution. However, when the sodium sulphate is added to the pulp suspension before the handsheet is made, it is apparent from Table IV that the water resistance of the sheet is lost. An explanation of this effect of sodium sulphate may be that the zeta-potential of the hydrous alumina is lowered, as Weiser *(14)* pointed out, and thus the sol becomes less adsorbed by the fibers. The fact that as little as 1% of sodium sulphate will almost eliminate the sizing effect of the aluminum oxide sol made from aluminum chloride is in accord with the results obtained in the preliminary experiments using an aluminum oxide sol made from aluminum sulphate.

Effect of Aluminum Sulphate on Strength Properties

In this experiment, 90-gram batches of pulp were beaten for 1 hour in the British disintegrator and

diluted to 10 liters; then the desired percentage of dissolved alum was added and the pH adjusted to 5.5 with a 1% sodium hydroxide solution. The handsheets were then made up in the usual manner and tested.

The data obtained are given in Table V. The strength values are plotted against the percentage of ash in the paper in Fig. 5.

The effect of the addition of alum upon the tub-sizing properties of paper was studied by trimming and pasting the handsheets from the above experiment into a long roll and tub sizing them with starch, using the laboratory tub-sizing equipment.

TABLE V.—THE EFFECT OF ALUM ON THE STRENGTH PROPERTIES OF PAPER

Alum added, %	0	2	3	4	5.6	11.2
Ash in paper, %	0.29	0.41	0.62	0.652	0.847	1.51
Al_2O_3 in paper, %	....	0.117	0.327	0.359	0.554	1.22
Bursting strength, points/100 lb.	91.6	92	87.7	90.5	81.2	73.1
Tear factor*	116.5	112.4	116.8	113.5	116	118.5
Fold, number of double folds	428	586	280	467	293	65
Tensile strength, lbs.	9.73	10.57	10.43	9.55	9.1	8.9
Porosity, sec.	39	33	36	33	35	38
Fluorescence size time, sec.	0	0	0	0	0	0

* Grams per sheet divided by basis weight.

The data for the physical tests of the conditioned sheets, as well as the percentage increase in strength produced by the tub sizing, are presented in Table VI.

The data in Table V show that strength is lost as the amount of alum added to the pulp suspension increases. This observation agrees with the work presented by Ellern-Eichmann *(11)* and Keller, Simmonds, and Baird *(12)*, who added alum under different conditions but nevertheless obtained strength losses as the amount of alum increased.

The addition of alumina in the form of alum does not cause a sizing action. The results obtained with the tub sizing may be considered as independent of the original water resistance of the sheet, because the water penetration time was zero for all the sheets. The tub-sizing strength increment is much greater for the sheets which had more alum present and started with lower physical tests. The explanation for the apparent taking up of more starch with increasing amounts of alum may be traced to the electrostatic condition of the fibers. As the negative electrostatic charge on the cellulose decreases, the starch particles are less repelled and can flow into the capillaries much as water does. When the charge approaches the neutral point, the starch is neither repelled nor flocked out but may flow in. If the negative charge is converted to a positive one, the starch would tend to plug rather than penetrate the sheet.

It remains for future work to determine how and to what extent these effects produced by alumina are modified by the presence of rosin size.

TABLE VI.—THE EFFECT OF ALUM UPON TUB SIZING OF PAPER WITH STARCH

Alum added, %	0	2	3	4	5.6	11.2
Ash in paper, %	0.29	0.41	0.62	0.652	0.847	1.51
Al_2O_3 in paper, %	....	0.116	0.327	0.359	0.554	1.22
Bursting strength, points/100 lb.	123	128	124	124	125	120
Bursting strength,* % increase	34.3	39.1	41.4	37.0	53.8	64.1
Tear factor* **	85.5	85.3	87.4	86.9	90.8	88.8
Tear factor,* % decrease	26.6	24.1	25.4	23.4	21.6	25.1
Fold, number of double folds	1596	2310	2107	1429	2006	1493
Fold,* % increase	273	294	652	206	585	2180
Tensile, lb.	15.45	16.73	16.17	15.75	15.2	15.7?
Tensile, % increase	58.8	58.1	55.1	64.9	67.1	65.8
Fluorescence size time, sec.	27	59	59	56	59	60

* The percentage increase or decrease in the strength properties are calculated using the data from Table V.
** Grams per sheet divided by basis weight.

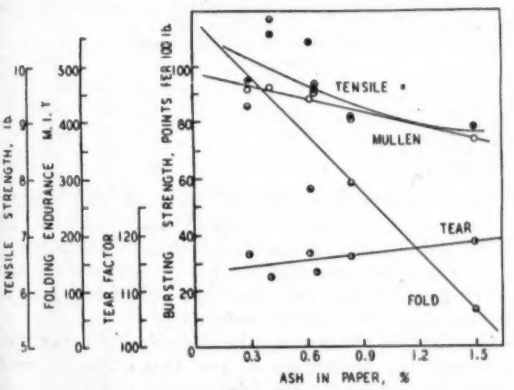

FIG. 5
Relation Between Various Strength Properties and the Percentage of Ash in the Paper

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Coloring of Papers and Boards*

By Joseph W. Viner[1]

Abstract

A method has been developed by which it is possible to apply a color or produce two color effect. such as designs or the application of a trade mark to a colored stock, on a standard paper or board. The advantage of this procedure is that orders can be made on receipt and thus eliminates the necessity for carrying a large inventory of varied colored papers.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 14-17, 1944.

[1] Vice President, International Printing Ink Div. Interchemical Corp., New York, N. Y.

The coloring unit is of the aniline press design with certain modifications. Machinery, colors, and production costs are discussed briefly.

It is the purpose of this paper to bring up points of interest in the economic benefits to be derived from the allover coloring of various papers and boards; benefits which result from the dual color effects and distinctive allover designs obtainable by passing the web once through a machine built for coloring and/or printing. The web may be rewound immediately.

All convertors of paper will recognize the economic benefit of being able to carry in their stockrooms one base stock of standard weight which can be colored in any width and in any tonnage, as the demand may arise. It certainly would simplify the inventory stock problem and would enable the sales department to have an enviable sales advantage. It can be done, and at a reasonable cost without too great an investment in machinery and without the need of exceptionally trained pressmen.

This method is not a finished process of coloring or printing distinctive designs on paper or board; nor, is it the best of all methods. Neither is it claimed that it is a process in which all the problems have been overcome; nor is it applicable to all kinds of paper. It is brought to attention to show the progress that has been made in this one method and to stimulate the desire to, by some manner, meet the post-war demands for attractive utility wraps and packages.

The type and color of the base stock is normally dull and in the case of kraft, etc., decidedly brown. These papers can be so processed as to produce all the strong tints and even pastels. By extending the application of this coloring method, two color effects can be attained which may be the superimposition of a varied color design on a colored base. The design may be pictorial or a trade mark. By altering the composition of the color, dull or glossy effects may be produced so that by proper combination a finished package paper can be made.

In addition to the decorative aspects, the same method can be used for producing utilitarian papers such as greaseproof, moistureproof, flameproof, etc. This of course entails special coating mediums to give the specific characteristics desired.

Coloring Equipment

The process equipment consists of a combination rubber roller coloring unit of the familiar aniline press design followed by a rotogravure unit with a doctor blade attachment. A drying drum, the unwinders, and rewinders usually needed for rolls are also necessary. The aniline coloring unit and the rotogravure unit are combined in one frame followed by the drying unit as a separate unit in line. This is a combination of older arts and practices, but there are some new devices and techniques, which to mention a few, are: (a) the use of rubber doctor blades to replace, when desired, the harsher steel doctor blades, (b) the flooding of the nip for prestaining, (c) the use of a preaniline allover coloring unit to brighten the stock or fill up the irregularities or even lay down a background coat, after which an allover design or distinctive pattern is laid down by a pad roll or etched rotogravure roll.

Instead of by festooning, the drying is done by wrapping the paper around a steel drying drum. According to size of the drum, the temperature inside of the drum, and the weight of the paper, operations are thereby permitted at speeds of 50 to 200 feet per minute, or even much higher. The cost of a complete machine for heavier board, e.g., 0.016 or 0.030 point kraft, with widths up to 78 inches wide, to handle rolls of 3000 pounds at speeds of 50 to 200 feet per minute, was, in pre-war time, about $8,000 to $12,000. These are very heavy and durable machines with motors, unwinders, printing and coloring units, dryers, and rewinders. The same equipment for lighter papers cost only $5,000 to $7,500.

Colors

The color solutions come in all familiar colors together with blacks, whites, extenders, and varnishes. All are easily blended with each other or may be used as straight colors. These color solutions offer no problem as they come in the consistency of "heavy cream" and are ready to run. The mixing, thinning where desired, blending to form other colors, cutting down to get tints, or changing the body for other purposes is so simple that anyone can learn to do it with little instruction.

The color solutions come in both dye solutions which are not permanent to light, or in pigment color solutions that are permanent to sunlight, and are as opaque or as transparent as oil inks or paints of the same pigments. There is no toxic effect nor fire hazard.

The washing-up is a matter of 5 to 15 minutes at the most and color changes may be made with equal facility.

Cost

The color solutions are sold in kits or large drums and the costs differ with intensity of color, the kind of pigment used, or the size of package purchased.

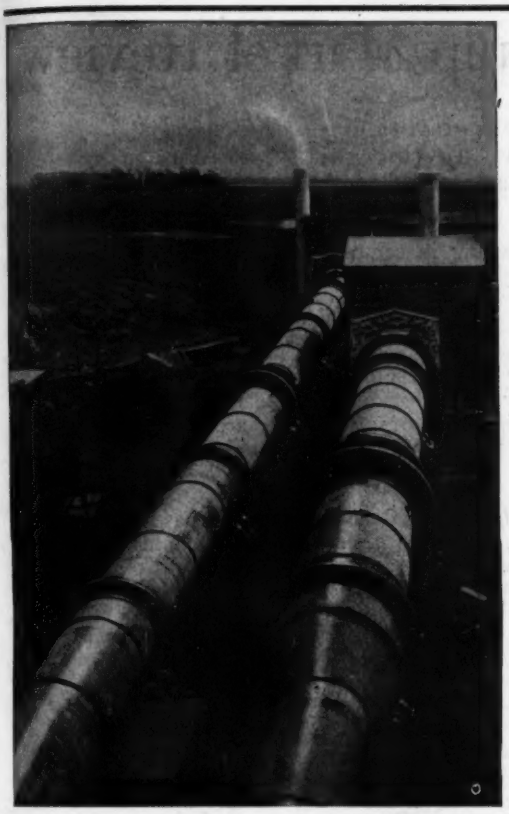
Pre-war prices will illustrate the cost factor when taken in connection with coverage figures on definite jobs for allover coloring on water finish kraft stock, 0.016 point in thickness, to produce many varied color effects.

	Cost per gal.	Water Finished Kraft, sq. ft.	Jute, sq. ft.
White	$1.43	1400	1900
Yellow	1.14	1480	1832
Black	1.07	1451	2100
Orange	1.30	1554	1850
Deep red	1.26	1483	1940
Deep blue	1.47	1530	1860
Light blue	1.31	1670	2300

These figures show that type of stock and hardness of the face of the stock materially affect the cost. The above solid coloring ranges from 50 to about 96 cents per thousand square feet of surface of solid coloring. The dye solutions are somewhat less expensive than the pigment solutions.

For design, the same color solutions are used and of course the percentage of the total surface colored would be the factor in determining the cost as the operation is the same through the machine; except for the doctor blade operation or preflooding the nip for prestaining.

Where it is desirable to lay down a background tone prior to the design, it is usually a very much diluted color solution which costs about 50 cents to $1.00 a gallon. Then, as the design uses very little coverage of the strong color, a monogram or distinctive pattern design does not cost much more than the solid coloring, since the entire operation is done once through the machine. In fact, it often costs much less and is expected to cause a demand for color and for special finishes where these did not exist before. Also coloring need not be confined to any one paper or board field but, with refinements, will eventually be extended into the better wrapping paper field.



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"Non-Users Are The Losers"

LOCKPORT FELT COMPANY

Newfane, N. Y. — U. S. A.

New York Paper and Pulp Market Review

Civilian Paper Supply Outlook Most Unfavorable — Amended Conservation Order Increases Merchants' Inventory — Pulp Situation Critical — WPB Urges the Salvage of More Waste Paper.

Office of the PAPER TRADE JOURNAL,
Wednesday, November 15, 1944.

The outlook for paper for civilian use continues unfavorable. The prospect for the remainder of the year and for early 1945 is the most unfavorable that the wholesale market has ever faced. How to continue business with rapidly diminishing inventories, is expressed in current reports which reflect grave concern of the future, from many manufacturers' representatives, jobbers, and general paper merchants.

Conservation Order M-241, as amended November 11, directs that, on and after November 1, 1944, no paper merchant shall accept delivery, and no person shall deliver to a paper merchant, any paper or paper board for warehouse stock, if the dollar inventory value exceeds, or by such delivery shall exceed, 55% of the merchants total dollar sales inventory during the latest preceding three calender months plus 20 tons. The previous limitation was 50%. Converted items, other than plain and coated paper, are excluded.

The index of general business activity for the week ended November 4 rose to 140.1, from 137.3 for the previous week, compared with 136.6 for the corresponding week last year. The index of paper board production was 150.7, compared with 128.5 for the previous week, and with 140.9 for the corresponding week in 1943.

Paper production for the week ended November 4 was estimated at 94.1%, compared with 89.9% for 1943, with 88.5% for 1942, with 105.0% for 1941, and with 85.6% for the corresponding week for 1940.

Paper board production for the week ended November 4 was 96.0%, compared with 93.0% for 1943, with 84.0% for 1942, with 97.0% for 1941, and with 78.0% for the corresponding week for 1940.

Wood Pulp

No substantial improvement in the wood pulp situation to provide more paper for civilian use, is expected until heavy all-over Government requirements can be reduced. The Over-all Paper Industry Advisory Committee of the WPB announced late last week that there may be a decrease in military demands for pulp after V-E-Day, as more of the world's supply is made available for the Allies. The following were among the recommendations: That withholding of pulp from integrated mills be reduced as quickly as practicable; that allocation of market pulp revert to use and inventory control as soon as possible; and that Order L-209, controlling wire cloth should be revoked.

Rags

Mill purchasing continues active in new cotton cuttings. All grades of new cotton rags are active. Old cotton rags continue less actively than formerly. Buying by roofing mills is more restricted at this date.

Old Rope and Bagging

No important change has been reported in the old rope market this week. Demand is good. Manila fiber is scarce and other fibers are firm.

Trading in scrap bagging continues narrow and in light volume. Prices continue nominal.

Old Waste Paper

The WPB reports that it is of the utmost importance to increase and continue the salvage of waste paper. Mill demand is active for all grades and the requirements of many mills are only partly filled. Prices are strong at ceiling levels.

Twine

Conservation Order M-138, Istle, has been amended to remove all restrictions on the quantity of Palma istle used in the production of twine. The consumption of a limited amount of Pita istle (fair, average quality grade) is now permitted for twine. Previously it has been permitted in the manufacture of rope only.

To Open Bids for November 27

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 15, 1944—The Joint Congressional Committee on Printing will receive bids on November 27 for paper for the use of the Government Printing Office on November 27 from January 1 for a three months period. The committee will meet December 4 to consider awards. The committee will ask for bids on the following.

1,500,000 pounds newsprint paper.
100,000 pounds telephone book news.
2,420,000 pounds machine-finish book paper.
4,500,000 pounds offset book paper.
100,000 pounds antique book paper.
80,000 pounds 50% antique book paper.
1,750,000 pounds supercalendered book paper.
4,000,000 pounds machine-coated book paper.
120,000 pounds coated book.
2,900,000 pounds mimeograph paper.
250,000 pounds U S. M. O safety writing paper.
11,300,000 pounds writing paper.
3,470,000 pounds map paper.
630,000 pounds manifold paper.
3,310,000 pounds bond paper.
1,140,000 pounds ledger paper.
1,530,000 pounds index paper.
260,000 pounds cover paper.
230,000 pounds manila paper.
250,000 pounds kraft paper.
100,000 pounds blotting paper.
40,000 pounds manila tag board.
550,000 pounds calendered tag board.
120,000 sheets railroad board.
440,000 pounds wood bristol.
3,600,000 pounds postal card bristol.
500,000 pounds news board.
310,000 pounds binder's board.
40,000 pounds chestnut cover board.

In cases where more than 1,000 reams are called for, proposals will be received for 1,000 reams or more.

West Virginia Pulp and Paper Company

230 Park Ave.
New York

35 East Wacker Drive
Chicago

Public Ledger Building
Philadelphia, Pa.

503 Market St.
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Manufacturers of

ENGLISH FINISH SUPERCALENDERED MACHINE FINISHED BOOK and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing, Mimeograph, Ledger, Eggshell, Cover and Music Papers, Index Bristol, Post Card and Label Papers

HIGH GRADE COATED BOOK

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KRAFT WRAPPING AND KRAFT ENVELOPE
KRAFT LINER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

MILLS:

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

KOSMOS—DIXIE PARIS BLACKS

Unexcelled carbon black pigments for all types of paper and board stocks.

Outstanding for soft texture, particle fineness, and jet black color.

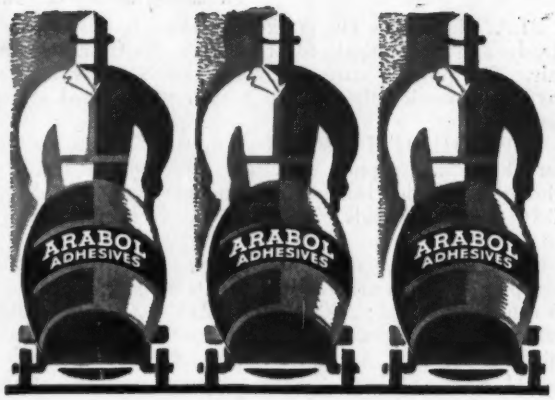
Best for performance in the Beater and Jordan because of ease of wetting and ready dispersion in the pulp.

Takes well to the fiber and shows high retention.

UNITED CARBON COMPANY, INC.

Charleston, West Virginia

New York Akron Chicago



PUT ADHESIVES IN YOUR POST-WAR PLANS

Because there have been many improvements in adhesives—and many new developments in their application—you will want to review your adhesives requirements, when making your post-war plans. Considerable laboratory research may be necessary to determine *the one best adhesive* for each contemplated peace-time application. This research requires time. It should be undertaken now.

Arabol urges you to submit your post-war plans for full analysis and research. Arabol Service Engineers are available for confidential consultation, without cost or obligation. They will apply to your problem the experience gained from developing more than 10,000 industrial adhesives formulae during 59 years—1500 in the two war years alone. When writing, please address Dept. 110.

ARAMIX—an extender for your tapioca stockpile

THE ARABOL MANUFACTURING CO.

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Adhesives? . . ARABOL!

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, November 15, 1944.

BLANC FIXE—The market for blanc fixe is reported steady and unchanged, for the week. Current demand fair. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton.

BLEACHING POWDER—Current demand is reported good. Supply situation reported satisfactory. Bleaching powder is currently quoted at from $2.50 to $3.10 per 100 pounds. All prices in car lots, in drums, f.o.b. works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 25 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f.o.b. shipping point.

CAUSTIC SODA—Supply situation continues tight, with production high and broad demands reported very heavy. Solid caustic soda is currently quoted at $2.30 per 100 pounds. The flake and ground are currently quoted at $2.70 per 100 pounds. All prices in car lots, in drums, f.o.b. works.

CHINA CLAY—Demand for some grades of china clay is reported moderate this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported china clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Production reported excellent. Demand for all uses heavy; all essential requirements fulfilled. Prices remain unchanged. Chlorine is quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b. works.

ROSIN—Prices are quoted unchanged on most grades of rosin this week: OPA ceiling price on "G" gum rosin is set at $5.79 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $5.75 per 100 pounds in barrels, New York. Seventy per cent gum rosin is currently offered at $6.06 per 100 pounds, f.o.b. works.

SALT CAKE—Demand reported moderate. Quotations on salt cake continue to remain unchanged. Domestic salt cake is currently quoted at $16 per ton.

SODA ASH—Market requirements for soda ash continue very heavy. Production reported good but manpower shortage delays bagged shipments. Prices continue unchanged. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Corn is reported coming into market in heavy volume, and the industrial supply situation continues to improve. Quotations continue unchanged. Pearl is currently quoted at $3.72 per 100 pounds. The powdered grade is currently quoted at $3.83 per 100 pounds. All prices f.o.b. Chicago.

SULPHATE OF ALUMINA—Supply situation is reported excellent. Quotations are unchanged. Prices on the commercial grades are quoted at from $1.15 to $1.25 per 100 pounds. The iron free is currently quoted at $1.85 per 100 pounds. All prices in car lots, in bags, f.o.b. works.

SULPHUR—Demand is reported steady for sulphur. Quotations on all grades continue unchanged. Annual contracts are currently quoted at $16 per long ton, f.o.b. mines. The current contract prices at Gulf Ports remains unchanged at $17.50 per long ton.

TALC—The market for domestic talc is reported moderately active. Quotations unchanged Domestic grades are quoted at from $16 to $21 per ton, at mines.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract...	*$58.00	@	—
Sheets	66.00	"	—
* OPA Maximum Price.			
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping...	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag.....	*4.375	"	—
* OPA Manufacturers' Prices.			
Tissues—Per Ream—Carlots			
White No. 1.....	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½....	1.00	"	—
White No. 2.....	.90	"	—
Anti-Tarnish M.F..	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet....	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.....	2.20	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute.....11.25		@	—
No. 1 Manila Wrapping, 35 lb.....	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.....	5.75	"	6.00
Boards, per ton—			
News *48.00		@	—
Chip *48.00		"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards...	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
No. 1..	$10.55@$12.75	$11.70@$14.25
No. 2..	9.65 " 11.75	10.80 " 13.25
No. 3..	9.20 " 11.25	10.35 " 12.50
No. 4..	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated...	$13.65@$15.50
No. 2 Glossy Coated...	12.40 " 14.00
No. 3 Glossy Coated...	11.60 " 13.25
No. 4 Glossy Coated...	11.15 " 12.75
No. 1 Antique (watermarked)	10.25 " 11.75
No. 2 Offset	9.60 " 11.00
A Grade E. F.....	9.35 " 10.75
A Grade S. & S. C...	9.60 " 11.00
B Grade E. F.	8.85 " 10.25
B Grade S. C.	9.10 " 10.50
C Grade E. F.	8.55 " 9.75
C Grade S. C.	8.80 " 10.00
D Grade E. F.	8.25 " 9.50
D Grade S. & S. C. ..	8.50 " 9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowances.

Bl. Softwood Sulphite.....	$86.00
Unbl. Softwood Sulphite.....	74.00
Bl. Hardwood Sulphite.....	83.50
Unbl. Hardwood Sulphite.....	71.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich ..72.00 @	82.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate...	82.00
S. Semi Bleached Sulphate...	75.00
N. Unbl. Sulphate.....	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	72.00
Unbl. Soda	68.00
Groundwood	50.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area).....	10.50
West Coast (out area).....	16.50

	50%-80% Air Dry Weight
Northeast	11.50
Lake Central	11.50
Southern	14.00
West Coast (in area).....	9.50
West Coast (out area).....	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

Domestic Rags

New Rags (Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1..	6.50	@	7.25*
Silesias No. 1.....	—	"	5.75*
New Unbleached...	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.50*

* OPA Maximum Prices.

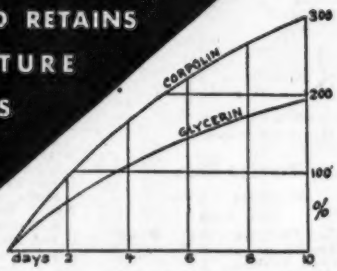
We Are Looking for Trouble

Sometimes small things make lots of trouble. Could your machinery be changed a little to save a lot of work? Write and tell us what we can do to help. Or a *Union* representative will be glad to call.

UNION MACHINE COMPANY
FITCHBURG, MASS.
(Associated with Union Screen Plate Company)

CORPOLIN*

ATTRACTS AND RETAINS MORE MOISTURE THAN DOES ANY OTHER LIQUID



Moisture Attraction at 100% Rel. Hum. and 27° C.

*Patent Pending. Name Reg. U. S. Pat. Off.

CHARACTERISTICS: Colorless, heavy, odorless liquid; non-volatile, non-toxic. Resembles glycerin in appearance and feel.

USES: for plasticising any kind of paper for any use.

AVAILABLE in any quantity without priority.

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EMBOSSING ROLLERS

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Mfrs. of Engraved Embossing Rollers and Plates of Any Type and Description
Worn Rollers Re-Engraved.

Complete Designing and Engineering Service

PENNOTEX OIL CORPORATION

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New York, N. Y.

AMORPHOUS WAXES
Melting Points 120° F. to 205° F.

For the Manufacture of
LAMINATING PAPER . . GLASSINES . . WATERPROOFING . . GREASE PROOFING . . EXTENDERS FOR PARAFFIN, FOOD CONTAINERS, CONTAINER LININGS, ADHESIVENESS AND PROTECTIVE COATING.

Price & Pierce Ltd.

WOOD PULP & PAPER AGENTS

for domestic and export

60 East 42nd Street, New York 17, N.Y.

Old Rags

White, No. 1—			
Repacked	*3.80	@	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	@	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.25	@	4.35
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	5.00
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

*OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Mixed Books	1.10	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Mixed Ledger, colored	2.00	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.95	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	1.10	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.36	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.21	"	—
Soft Fiber Rope	.19	"	—
Cotton	.23	"	—

(Hard Fiber)

Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—	
New White No. 1	.07½
New White No. 2	.05½
Light Silesias	.05½
Black Silesias, soft	.03½
New Unbleached	.07½
Washable Prints	.04½
Washable No. 1	.03
Blue Overall	.05½
Cottons—According to grades—	
Washable shredding	.01½
Fancy Percales	.04½
New Black Soft	.03½
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04½
Men's Corduroy	.03½
Ladies' Corduroy	.01
Cottonades	.03½

Domestic Rags (Old)

White No. 1—Repacked	3.80	@	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
White No. 2—Repacked	2.90	@	—
Thirds and Blues—			
Miscellaneous	1.80	@	—
Repacked	2.30	"	—
Black Stockings— (Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	@	—
Domestic No. 2	1.45	@	—
Roofing Bagging	1.35	@	—
Old Manila Rope	5.75	@	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
No. 1 Clean bright—			
Sisal Strings			.04
No. 2 Clean bright—			
Sisal Strings			.03
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	1.25	"	1.35
No. 2	1.75	"	1.80
Wool Tares hea	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	1.25	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	—	@	2.50
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	—	"	1.55
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	5.25	"	—
Jute Car Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	"	2.75
South American	—	"	3.00

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	—	@	2.50
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	—	"	1.55
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	5.25	"	—
Jute Car Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	"	2.75
South American	—	"	3.00
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Aust. Wool Pouches	—	"	3.50
New Zealand Wool Pouches	—	"	3.50
New Burlap Cuttings	4.75	"	4.85
Heavy Baling Bagging	4.00	"	4.10
Paper Mill Bagging	2.50	"	3.00
No. 2 Roofing Bagging	1.35	"	—

*OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¼	"	.05
New White No. 1	.06¾	"	.07
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06¼
Underwear Cutters, Bleached	.06¼	"	.06½
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06½
New Black Silesias	.03	"	.03½
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06¾
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.03½	"	.03½
Corduroy	.03¼	"	.03½
New Canvas	.06¼	"	.06½
U. V. D. Cuttings	.06¾	"	.06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.40
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—
No. 2	1.45	"	—
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	5.75	"	—

*OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Misc.	2.15	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Ledger, colored	2.00	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Box Board Cuttings	.72½	"	—
Kraft Corrugated Cuttings	2.25	"	—
Old Corrugated Containers	1.40	"	—
Overissue News	1.00	"	—
No. 1 News	1.00	"	—
No. 1 White Ledger	2.30	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—